# FEDERAL AVIATION ADMINISTRATION OPERATIONS RELATED TO SAFETY AND PROCUREMENT MANAGEMENT



## HEARINGS

BEFORE A

## SUBCOMMITTEE OF THE COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

FIRST SESSION

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NOVEMBER 28 AND 29, 1977

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# CONTENTS

# FEDERAL AVIATION ADMINISTRATION OPERATIONS RELATED TO SAFETY AND PROCUREMENT MANAGEMENT

MONDAY, NOVEMBER 28, 1977

HOUSE OF REPRESENTATIVES,
GOVERNMENT ACTIVITIES AND
TRANSPORTATION SUBCOMMITTEE
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 2247, Rayburn House Office Building, Hon. John L. Burton (chairman of the subcommittee) presiding.

Present: Representatives John L. Burton, Glenn English, Jack Hightower, and Arlan Stangeland.

Also present: Miles Q. Romney, staff director; Bruce R. Butterworth, George Gudauskas, and Cynthia M. Mora, professional staff members; Elizabeth L. Wasserman, clerk; and Rachel Halterman, minority professional staff, Committee on Government Operations.

Mr. BURTON. The subcommittee will come to order.

Ladies and gentlemen, these hearings deal with the effectiveness of the FAA in implementing its statutory duty to promote safety in air commerce. The hearings will focus on two related matters—procurement management and safety. Safety and procurement are very closely related.

When the FAA expends the taxpayers' money on certain items which it either does not need or it does not receive, or if money is wasted through certain other processess, this money is not available to the agency to purchase safety equipment that it does need, or to hire more personnel to enforce safety regulations.

To put it bluntly, wasted money can lead to wasted lives in an agency like the FAA. These hearings are not only for the edification of this subcommittee and the Members of Congress, but also for Mr. Bond, the new Administrator, who inherited this bag of snakes. Certainly, we hope that the evidence that is brought out today and tomorrow will lead him to the conclusion that there is a great need to shake up what I consider to be a fairly slipshod operation.

I use the term "slipshod" because it reminds me of an incident when I was in college. We were playing basketball, and the electric timer went out. In the last 5 minutes of the game, it was timed with a stopwatch. Either 2 seconds before the end of the game, or 2 seconds after the end of the game, depending on the side you were on, the winning basket was made, and the losing coach later re-

ferred to his loss as one caused by the most slipshod run athletic system he had ever seen.

Well, in my judgment some of the procedures by which FAA contracts are awarded, and the FAA's clinging to the old "see and avoid" technique to avoid midair collisions, are not unlike using a hand stopwatch instead of an electric timer.

There are also three things that bothered me personally about the FAA before we got into these specific hearings. They give me a gut feeling that something might be wrong with the Administration.

On September 8 and 9, 1977, in this very room, we had a hearing on aviation safety and airline deregulation. At that time, the Administrator was asked whether he foresaw any additional burdens, need for additional funds, or help for his agency in insuring safety under a deregulated economic environment. The Administrator answered that he saw no foreseeable need for largely expanded duties or expanded staff.

At the same time, seated next to him was Mr. Scully who, I assume, had to be in possession of memos from each of the sections of FAA's Flight Standards Service that were asked to evaluate their future manpower needs in light of the increased workload caused by airline deregulation. Each and every one of these memos, at one point or another, in one form or another, stated that they thought their duties would be increased, and that they would therefore need additional staff.

The fact that Mr. Bond was apparently not aware of these memos when it was known that he would be testifying before this very committee about that very factor leads me to believe that if you have assistants like that trying to help you, you don't need any enemies trying to hurt you.

I am also very concerned about something that may seem trivial to anyone else. But it gives me a feeling of unreality about the FAA's operation.

There was a court case in which a pilot refused to take up an airplane because he said it was unsafe. There is an FAA regulation which states that the pilot is in command of an aircraft, is directly responsible for the safety of flight, and has the final authority over the operation of that aircraft. That means, in effect, if a pilot does not believe an airplane is safe, he can refuse to operate that plane.

The FAA actually raised in court the argument that that regulation really did not apply because the plane was on the ground, and that therefore the pilot was not operating the plane. The plane would have had to be up in the air before it was operating.

This seems, at best, to be idiotic. An agency that would raise that type of an argument in court does not establish too much confidence in my mind.

These hearings will first go into certain procurement practices and decisionmaking processes. The first witness will be John Rider, who was especially assigned to this subcommittee to look into FAA procedures in one particular procurement. "Procedure" is really not a good phrase because the FAA really does not, in my judgment, have a procedure. Sometimes they make a good buy, and quite often, they make a bad buy. But there does not seem to be any real procedure.

We will then hear from representatives of the General Accounting Office who will follow Mr. Rider. We will then hear from the FAA.

All witnesses before the subcommittee will be sworn and will be provided with a copy of the committee rules.

Mr. Rider, would you raise your right hand? Do you swear that the testimony you are about to give before the subcommittee is the truth, the whole truth, and nothing but the truth, so help you?

Mr. RIDER. Yes, Mr. Chairman.

Mr. BURTON. Mr. Rider was a special assistant to the subcommittee. Mr. Stolarow, Deputy Director, Procurement and Systems Division, GAO, will be accompanied by Leo Weintraub and Samuel Pines. Then we will have Administrator Bond who will be accompanied by four of his top people.

Tomorrow's, hearing will deal with aviation safety, such as the "see and avoid" technique and other matters, as well as some more discussion on the FAA's view of airline deregulation as it might affect aviation safety in view of the internal memorandums that were available to the subcommittee.

Mr. Rider?

## STATEMENT OF JOHN M. RIDER, SPECIAL ASSISTANT, GOVERNMENT ACTIVITIES AND TRANSPORTATION SUBCOMMITTEE

Mr. RIDER. Mr. Chairman and members of the committee, my name is John M. Rider. I appreciate the opportunity to appear today to discuss my report, prepared for the House Government Activities and Transportation Subcommittee on the Federal Aviation Administration's failure to successfully procure airport surveillance radar systems—eighth generation—under a contract with General Dynamics Corp. At the time I prepared the report, I was on loan to the subcommittee from the U.S. General Accounting Office.

Mr. Chairman, I would like to submit the report for the record.

Mr. BURTON. Without objection, the report is received.

[The material follows:]

SUBCOMMITTEE ON GOVERNMENT ACTIVITIES AND TRANSPORTATION

U. S. HOUSE OF REPRESENTATIVES

COMMITTEE ON GOVERNMENT OPERATIONS

# FAA PROCUREMENT ACTIVITIES

(PARTICULARLY THOSE RELATING TO THE PROCUREMENT OF AIRPORT RADARS AND ANTENNAS UNDER CONTRACT WITH GENERAL DYNAMICS CORPORATION)

November 18, 1977

A staff study prepared by John M. Rider

CONTENTS

## ABBREVIATIONS

| | | |
|---|---|---|
| ASR-8 | - | Airport Surveillance Radar - 8th Generation |
| DOD | - | Department of Defense |
| DOT | - | Department of Transportation |
| FAA | - | Federal Aviation Administration |
| AAF | - | Airway Facilities Service, FAA |
| AFS | - | Flight Standards Service, FAA |
| ALG | - | Logistics Service, FAA |
| GC | - | General Counsel, FAA |
| GD | - | General Dynamics Corporation |
| OMB | - | Office of Management and Budget |
| PMM | - | Peat, Marwich and Mitchell Company |
| RFA | - | Request for Action |
| SC | - | Specification Change |
| SRDS | - | Systems Research and Development Service |
| TAR | - | Technical Action Request |
| TI | - | Texas Instruments, Incorporated |
| TSARC | - | Transportation Systems Acquisition Review Council |
| RFP | - | Request for Procurement |
| DOTCAB | - | Department of Transportation Contract Appeals Board |
| GAO | - | U.S. General Accounting Office |

## GLOSSARY OF TERMS

RFA - Request submitted by a contractor to use a non-standard part in equipment being furnished to the Government. A non-standard part is any part not listed in the detailed equipment specification or other document applicable to the contract.

TAR - Request submitted by a contractor to deviate from a contract technical requirement. If approved by the Government, the TAR usually results in a specification change and modification to the contract.

SC - A formal change to a technical specification generated by the Government. It can become a contract requirement only through action by the Contracting Officer. Specification changes may be generated in response to a TAR, or may be generated on the sole initiative of the Government in response to changes in requirements.

GLOSSARY OF TERMS (Cont'd)

Contract Types

| | | |
|---|---|---|
| Cost Plus No Fee with Ceiling | - | Government pays all costs up to a ceiling with no profit to the contractor. |
| Fixed Price Plus Incentive | - | Government pays contractor to produce a product for a fixed price within a prescribed delivery schedule. Costs in excess of the fixed price will be shared by the Government and contractor up to a ceiling. |
| Cost Type Contract | - | Government pays all costs, and contractor must put best effort forward to comply with the terms of the contract. |

## CHAPTER I

## INTRODUCTION

This staff report is in response to a May 27, 1976, letter from then-Subcommittee Chairman, William J. Randall, requesting assistance in reviewing the procurement procedures of the Federal Aviation Administration, which apparently have contributed to the failure of several major system procurements. The Subcommitee identified the ASR-8 radar system procurement as one such system because the FAA stands to lose about $13 million with nothing to show for its expenditure.

A draft report was submitted in August of 1976. In November 1977, Subcommittee Chairman John L. Burton requested that the report be updated.

The report was prepared by John M. Rider, a GAO employee temporarily detailed to the Subcommittee as an investigator.

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CHAPTER 2

## BACKGROUND

The Subcommittee on Government Activities and Transportation of the House Government Operations Committee maintains a continuous watch over Federal Aviation Administration operations to insure maximum possible economy and efficiency. As part of this surveillance activity the subcommittee has periodically conducted investigations of FAA's procurement practices. As a result, the subcommittee uncovered serious procurement mismanagement which has cost the taxpayers many millions of dollars and, at times, has delayed improvements to the safety of the National Airspace System (NAS).

In response to reports that FAA had awarded a major radar contract to an apparently unqualified bidder, the subcommittee initiated a preliminary review. As the investigation expanded and facts came to light, it was found that FAA's procurement management had badly deteriorated.

Our review centered on the production contract for the eighth generation of the airport surveillance radar system (ASR-8). The ASR-8 is the latest state-of-the-art solid state radar system which provides coverage to air traffic controllers for a 60-mile radius around terminals. It differs from previous generations of ASR systems, by improving detection of small aircraft and eliminating certain

interference caused by ground objects and weather.

The Department of Transportation (DOT) ordered that the ASR-8 contract be awarded to the General Dynamics Corporation (GD) despite technical and logistic evaluations by FAA which concluded that there were very high risks associated with GD's proposal. According to DOT's Associate Administrator for Administration, FAA management was unwilling at that time to make a detailed positive determination that this bidder was non-responsible because GD failed to show that it could meet the delivery schedule. Sixteen months later, in May of 1974, FAA learned from the contractor that costs had almost doubled--from $18.2 million to $33.7 million, and that the delivery schedule had slipped by nine months.

Two weeks after that, in June 1974, Texas Instruments (TI), then successfully producing ASR-8 equipment under another FAA contract, offered to build the radars and antennas for the same unit price and within the same delivery schedule as provided in the GD contract.

In July 1974, FAA's top management decided to accept the TI offer. But it also decided to restructure the contract with General Dynamics. FAA modified the GD contract from 37 radar systems plus 40 antennas for $18.2 million to one (1) radar system plus 40 antennas for $12.8 million. The unit price of a radar under the original contract was about $360,000.

The unit price of the radar system under the restructured contract was $10.4 million. FAA's rationale for this action was that it would help maintain competition, and permit FAA to experiment with the still untested features of the GD design. It took FAA until March 27, 1975 to complete this modification action.

Four months after the modification was signed by the FAA, GD notified FAA in July 1975 that (1) it did not plan to compete in the radar business and (2) the GD design did not offer any innovations over the TI radar. In November 1975, GD stopped all work, and subsequently FAA terminated the contract.

FAA has not received any radars or antennas under this contract, but stands to lose over $13 million. FAA failed in their attempt to maintain competition and the only positive result of this procurement is that TI successfully built and installed the ASR-8 radars to FAA's specifications and the systems are operating satisfactorily.

CHAPTER 3

FINDINGS

1) FAA's advanced planning for procurements is time consuming, and lacks direction. This is evident by numerous changes to equipment specifications, changes in the type of procurement after the proposal had been submitted to prospective bidders, and confusion and protests by the competing bidders.

2) It appears that FAA has failed to follow procedures established by the Department of Transportation for DOT review of the ASR-8 procurement contract and its subsequent modifications, and DOT has failed to require FAA to comply with these established procedures.

3) FAA failed to adequately monitor the ASR-8 contract although FAA's initial technical evaluation of the GD's proposal concluded that the government would have to exercise an extremely high effort to monitor this contractor's progress.

4) DOT Procurement Regulations, FAA Procurement Regulations, and agency procurement orders fail to contain any stated requirement for conducting regular contract program reviews. Program reviews are currently an integral part of DOD Procurement Regulations, requiring the Government to review in-depth contract schedules and costs, to identify contract

status, slippages, cost overruns, and to initiate immediate remedial action and follow up.

5) Although FAA regulations and orders fail to provide for contract program reviews, FAA says that it is conducting "program reviews" on some major contracts. FAA, however, has not issued program review guidance or defined the purpose, objective, or results of these reviews.

6) FAA's technical office repeatedly procrastinated and delayed in responding to the contractor's request for action on contract specifications. These delays ranged from three weeks to six months and were responsible, in part, for contractor schedule slippages and cost overruns.

7) FAA's top management are sometimes poorly prepared to make sound decisions. Some decisions are made without adequate preparation and are not based on information provided by legal, technical, and contract personnel. Records of meetings deciding major contract changes have not been prepared. Finally, FAA's top management cannot agree or recall what happened at crucial meetings deciding major courses of action on the ASR-8 contract.

8) FAA has inadequate procedures and guidelines for monitoring contractor costs and lacks direction when notified of performance slippages

and cost overruns. In May 1974, when the contractor reported costs to complete at $14.5 million over contract ceiling, FAA was reporting costs to complete at $4 to $6 million. When notified by GD of the $14.5 cost figure, FAA failed to analyze this information to determine why costs to complete had doubled. Without detailed cost information, FAA management certainly was unable and not prepared to determine the areas causing overruns, the costs attributable to the Government, whether the contractor could be price competitive, and actions to take on the GD contract.

9) FAA lacked adequate information on costs to certify that the contractor's performance was commensurate with funds expended. After visiting the contractor facilities, a FAA official refused to approve payment to the contractor. Nevertheless, FAA paid the contractor $1.2 million without resolving this official's objections.

10) FAA reportedly insisted on changing the type of contract from fixed price to cost, and in its contract modification did so. This change permitted the contractor to recoup about $2.4 million withheld by the Government since the date of award under cost sharing arrangements. Under the fixed price contract, these funds would not have been paid to the contractor if he failed delivery under the contract.

11) Under the modified cost type contract with GD, FAA also

deleted the requirements for cost status reports, subcontractor cost trend reports, overhead rate reports, and progress reports.

12) There were no FAA orders or stated policy in the FAA which details the responsibilities of the Office of the Chief Counsel for approving or disapproving contract payments. Also, it was not a matter of practice to advise the Chief Counsel's office before a contract payment is withheld. This seems contrary to an FAA policy, established in 1964, that directs legal counsel and procurement personnel to consult and coordinate during the procurement process. In the ASR-8 contract, the contractor has contended that FAA's failure to make payments on a cost type contract was a breach of the contract. This has created additional problems for the Government in its attempt to recover funds expended.

13) Although FAA's stated objective in modifying the ASR-8 contract was to stimulate competition for future procurements, and to test unique features on an advanced GD ASR-8, FAA failed on both counts. GD stated that it did not plan to compete in the ASR market and that the GD radar did not offer any innovations over the radar system being built by TI. In addition, FAA failed to receive antennas, but stand to lose over $13 million in this procurement.

CHAPTER 4

PRE AWARD

CHRONOLOGY

In 1971, a program was prepared to develop the eighth generation
1 of ASR and ancillary equipment. The improved system was targeted for installation at 31 locations. The program plan provided that the procurement request (PR) for the ASR-8 would contain carefully selected stringent
8 qualifications and technical evaluation criteria. The plan also called for a Request for Proposals (RFP) which would require proposals for one prototype system on a cost type contract, with options for a fixed price type contract for future production systems.

Such a RFP for ASR-8's was issued to 62 potential contractors on
94 March 17, 1972, for one prototype radar system with options on 30 production radar systems.

On March 24, 1972, the prospective offerors were invited to submit
272 questions to the Contracting Officer on the RFP.

On March 30, 1972, Amendment No. 1 to the RFP was issued changing
236 certain technical requirements.

377 In April and again in May, the closing date on the RFP was extended.

In April 1972, the FAA prepared a summary of risks on the design and production of the ASR-8 radar system. The FAA stated that ASR-8 specifications were written with the mandate that only known and proven features would be included. Features requiring development efforts were not included. Also, the report stated that personnel in the
333 engineering area had serious doubts as to the need for a prototype or pre-production system if strict adherence to the specifications as written was enforced. It was also doubtful whether the prototype route, and especially the "double prototype" route (procuring a prototype from two contractors) would be beneficial to the FAA.

On April 21, 1972, the Director of FAA's Logistics Service (ALG) still recommended, however, that the ASR-8 be procured on a cost plus incentive
306 fee (CPIF) basis for the first prototype system with fixed price incentive (FPI) options for the production systems.

FAA reported in April 26, 1972, that the Department of Transporta-
310 tion was now reviewing the procurement method.

On May 2, 1972, the Office of the Secretary of Transportation (OST)
339 was briefed on those new features which might require development. FAA stated that all features were either well within the state of the art,

didn't require development, or had been used on previous military radars.

On May 10, 1972, the Director of FAA's Airways Facility Service (AAF)
349 stated that specifications contained in the RFP did not fully or accurately define the agency's technical requirements.

On May 12, 1972, Amendment No. 2 was issued alerting prospective
237 offerors that the government would award a contract based on initial offers received, without discussion of such offers. Technical and/or
238 price negotiation would not be conducted at any time with any of the offerors. Also, the amendment changed the proposed contract from cost to fixed price incentive.

On May 20, 1972, General Dynamics (GD) submitted a target price
357 of $20,362,025 with a ceiling price of $22,764,099 for 31 ASR-8 systems and 40 antenna assemblies.

On May 22, 1972, Texas Instruments (TI) submitted a target price
360 of $17,229,951 with a ceiling of $18,872,675. TI offered an accelerated delivery schedule at no additional cost.

On May 23, 1972, the RFP was closed with only GD and TI responding.

On June 5, the contracting officer stated that the proposed ASR-8
371 contract included a relatively firm design and specification and performance

requirements which would permit the contractor to operate without detailed
371 control or technical direction. The contracting officer also determined that the use of a fixed price incentive contract was likely to be less costly than the other methods of contracting.

On June 7, 1972, an FAA technical evaluation team concluded that
373 TI's proposal was complete, adequate, and responsive in all substantive
375 areas. It also concluded that the GD proposal, while it could probably be upgraded, could not be considered complete, adequate, and responsive
387 and was considered a high risk to the government.

On June 12, 1972, FAA's Contract Division recommended that the award
376 be given to Texas Instruments.

On June 14, 1972, FAA's General Counsel office stated that awarding the contract without negotiation would bind the FAA into a
379 contract with unacceptable technical deviations that didn't meet FAA requirements.

On June 29, 1972, GD submitted a price reduction to its original proposal. Target price was reduced to $17,118,000 and the ceiling price was $18,624,000. This proposal was lower than the Texas Instrument's
383 proposal but the contracting officer stated that it must be considered late and must be assumed that to upgrade GD's proposal an increase in costs would probably be necessary.

On July 12, 1972, the DOT Director of Installation and Logistics,
398 stated that FAA did not have adequate price competition and TI had a significant competitive edge over GD. He believed FAA could not properly award the contract to TI.

On July 24, 1972, DOT's Assistant Secretary for Administration stated that the proposed price to TI could not be justified on the basis
402 of adequate price competition, and had not been justified on the basis of price analysis. He recommended FAA require submission of detailed cost and pricing data, require an audit, and conduct negotiations. This
342 in effect reversed FAA's determination of May 9, 1972 that the award be made without technical or price negotiations.

404 Letters were sent to both TI and GD as recommended and audits were conducted of both firms. The proposal date was extended by two months
405 to September 1, 1972, to include detailed cost information.

On August 16 and August 29, 1972, TI submitted letters to the FAA Administrator and Assistant Secretary of Transportation, respectively,
409 over the manner in which the pre-contract procedures were being under-
417 taken. Specifically, TI disapproved of the vascillating decisions concerning the requirement for pricing data, audits, and negotiations.

645 Later, TI protested but was denied by the Comptroller General (GAO).

On September 1, 1972, the revised proposals were received from TI and GD. Following is a comparison of their proposals:

| | | Price | |
|---|---|---|---|
| | | Target | Ceiling |
| 480 | Texas Instruments | $22,986,945 | $25,076,668 |
| | General Dynamics | 16,665,676 | 18,180,737 |

On October 4, 1972, the Department of Transportation submitted a
437-1 complete obligation plan for all Facilities and Equipment funds to the Subcommittee on Transportation of the House Committee on Appropriations. This included commissioning schedules for ASR-8's.

456 On November 6, 1972, FAA requested proposals from TI and GD to produce six additional ASR-8's making a total of 37 radar systems.

482
490 From November 15-17, negotiations were held with both TI and GD.

On November 20, 1972, final offers for 37 radar systems and 40 antennas were submitted as follows:

| | | Price | |
|---|---|---|---|
| | | Target | Ceiling |
| 463 | Texas Instruments | $22,871,699 | $24,950,959 |
| 466 | General Dynamics | 18,053,011 | 19,694,197 |

The final offer after negotiations was:

| | | Price | |
|---|---|---|---|
| | | Target | Ceiling |
| 486 | Texas Instruments | $21,131,000 | $23,052,000 |
| 491 | General Dynamics | 17,160,256 | 18,720,276 |

510 On December 8, 1972, the FAA Chief of Contracts Division recommended that TI be chosen. The technical analysis showed that the TI proposal was technically superior, and GD's proposal was marginally acceptable.

On December 21, 1972, FAA's pre-award review of the proposed
535 contract was forwarded to the Secretary of Transportation with a strong recommendation to award the contract to TI.

539 On December 26, 1972, FAA requested an extension of the proposal to January 31, 1973. Both TI and GD concurred with the extension.

On January 3, 1973, FAA gave an oral and slide presentation to the Under Secretary of Transportation, regarding the two proposals. The
540 presentation concluded that GD's probability of complying with all technical requirements, the delivery schedule, and of furnishing adequate technical manuals on schedule was very low. The probability of GD exceeding delivery schedule and producing at the final target price was extremely low; and the effort required by the government to technically monitor the contract was extremely high. Also, FAA estimated that costs avoided by accepting the TI proposal over GD's proposal was about $3.5 million.

According to the DOT Associate Administrator for Administration,
552 FAA recommended award to Texas Instruments at a $4 million higher price than General Dynamics but was unwilling to make the determination to

support that position. This official stated that federal procurement regulations provide that contracts shall only be awarded to responsible prospective contractors that can comply with the proposal including their ability to comply with the required delivery schedule. The regulations also provide that determination of "non responsibility" shall be made by the contracting officer if the information available to him or obtained by him does not indicate clearly that the prospective contractor is responsible. Thus, the burden of proof is on the bidder, and if he fails to convince the contracting officer of his ability, he cannot receive the award.

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According to the DOT official, FAA was unwilling, however, to set down for the record those points discussed with the Under Secretary, that in their opinion, General Dynamics could not meet the delivery schedule, or for that matter even come close. FAA should have, but did not, make a detailed positive determination that General Dynamics was not responsible. Without this, an award to the highest bidder, Texas Instruments, would have been difficult.

562-1

The Under Secretary of Transportation decided on January 10, 1973, to award the contract to General Dynamics with instructions to prepare the award documents immediately.

563

This decision was based on advice from the Director of FAA's AAF & ALG Services, that (1) GD's proposal was technically acceptable, (2)

564

564 GD had the capability, and (3) GD must be considered a responsible offeror for this procurement.

567 FAA awarded the ASR-8 contract to GD on January 12, 1973. On the
565 same day, TI brought to FAA a best and final offer. A comparison of the TI proposal to the [redacted] GD award follows:

| | Price | |
|---|---|---|
| | Target | Ceiling |
| 568 Texas Instruments | $19,151,357 | $ -- |
| General Dynamics | 17,160,256 | $18,720,276 |

PROJECT MANAGEMENT

PMM B-40 According to a Peat, Marwich and Mitchell (PMM) Study dated August 1974, implementation of effective project management practices would have resulted in better control of the ASR-8 acquisition. Internal decision making should have been rapidly coordinated, and contractor approaches should have been clearly determined in a relatively short period of time. However, project progress was slow between issuances of the initial procurement request in December 1971 and finalization of the contract in January 1973; procurement actions progressed slowly; technical requirements were initially imprecisely defined, tending to change weekly without decisive intercession by project management; and the proposal evaluation process and contract award criteria were not clearly thought through.

PROJECT PLANNING

PMM B-42 According to the PMM Study, plans should be employed as both communicative devices with respect to project direction and control instruments in the sense that they provide the baseline against which progress is measured. Although an effort was made in the project to accomplish some general and specific project planning, there is reason to question its content and adequacy.

An advance procurement plan was drawn in July 1971. However, it apparently made insufficient provision for the development of ASR-8 proposal evaluation criteria. The plan could also have been structured to result

PMM B-42 in a more definitive process (in terms of firm dates for finalization of technical requirements) and less protracted contract finalization period. While it may be argued that some of the delay was the result of the intervention of the Office of the Secretary to request resubmitted proposals subject to negotiation, it may also be advanced that, had adequate preproposal planning been accomplished and the plan appropriately implemented, there would have been no need for such intervention.

REQUIREMENT DETERMINATION

The PMM Study stated that one of the pillars on which communication with the contractor rests is the technical requirements document, the

PMM B-43 specification. With respect to the ASR-8, between the issuance of the RFP in March 1972 and its closing in June, three requests for technical

change occurred, increasing the contract funding from $5 to $14 million. (See Appendix I)

Incorporating technical changes and amending RFP's is bound to result in confusion and imprecision at the contractor's offices as well as a loss of confidence in the Agency. While such changes inevitably occur on occasion, it may be appropriate to introduce rigorous pre-submittal specification review procedures for major contractual efforts such as those involving the ASR-8.

PMM B-43

PROCUREMENT

The PMM Study also noted that the procurement process implies a great deal more than mechanically letting and monitoring contracts. There was an advanced procurement plan but it was largely ineffective. It did not force timely decisionmaking (e.g., the 8 month delay in ASR-8 contract award), require timely technical input (e.g.,the repeated redefinition of ASR-8 technical requirements), or result in a supportable decision with respect to contract award (e.g., DOT's overruling the Agency and directing award to General Dynamics).

PMM B-44

PROJECT COORDINATION/LIAISON

Finally, the PMM Study noted that although the Office of the General Counsel (GC) took exception to specifics of the ASR-8 procurement on two separate occasions prior to contract award, the GC position was

PMM B-44

overruled. Although in this case, it would seem that the GC position has been vindicated by events, the question is not essentially one of right or wrong. Rather, questions should be asked as to whether or not an adequate opportunity for input was provided and whether or not adequate and timely quality control and review processes were in place.

AGENCY ACTIONS

The PMM Study expressed findings, and conclusions, and it proposed 20 recommendations. The recommendations dealt primarily with the need to establish an acquisition life cycle system and the
1751 need for improving FAA's acquisition management, planning process, monitoring system, and procedural documentation. FAA's Associate Administrators and Chief Counsel concluded that good use could be made of these recommendations for improving the procurement system, but FAA deferred any action until another procurement study was made.

The Soules Study was undertaken and again several specific recommendations were made concerning procurement procedures and material management. FAA says that some of these have been or are being implemented.
1752 FAA says, however, that with respect to the PMM Study, "there is every possibility that recommendations specifically mentioned in the PMM Study were, coincidently converted to FAA procurement procedures." FAA, however, was unable to identify which ones were converted to FAA procedures.

# CHAPTER 5

## CONTRACT AWARD

### CHRONOLOGY

On January 12, 1973, FAA awarded a fixed price plus incentive (FPIC)
contract to General Dynamics Corporation to design and build 37 airport
567 surveillance radar systems and 40 antennas for a target price of
$18,174,437 with a ceiling price of $19,734,423. The first system was
scheduled for delivery 24 months after the award, in January 1975.

Within five months from the date of award, FAA inspection personnel
725 began forecasting a $1 million cost overrun and serious slippages in the
delivery schedule.

Within 11 months, the contractor's cost status reports showed a
751 $1 million overrun. Also, between October and December 1973, FAA continued
761
771 to report significant slippages in work schedules ranging up to 25 weeks
774 and concluded that it was unlikely that the delivery of the first system
would be on time.

1538 Contractor PERT charts--detailed schedules for completing items

called for in the contract--were found to be "success oriented" with over 185 delayed events reported in December 1973 but the end delivery date remained firm. FAA delays were also reported. FAA was repeatedly reminded to respond quickly to the contractor's request for specification changes because delays would have a definite impact on the contractor's schedule.

By March 8, 1974, FAA personnel assigned to the contractor's facilities had reminded FAA's technical office thirteen (13) times to respond to the contractor's request for specification changes in a timely manner. For example, it took FAA 6 weeks to respond to a request from the contractor to approve a paint color and another 5 months to incorporate this change into the contract. FAA technical officials attributed these delays to internal procedures which required various levels of review and frequent subcontracting for analysis and response.

By March 8, 1974, the status of request for actions (RFA) and technical action requests (TAR) included:

RFA's

| Submitted | Approved/Disapproved | Changed to TAR | Outstanding |
|---|---|---|---|
| 133 | 87 | 13 | 33 |
| Average Time to Respond (weeks) | 8.7 | | |

(The average time to respond on the Outstanding RFA's was 10.5 weeks)

-23-

TAR's

| | Submitted | Approved/Disapproved | Outstanding |
|---|---|---|---|
| 1248 | 15 | 6 | 9 |
| | Average time to Respond (weeks) | 8.4 | |

(The average time to respond on the Outstanding TAR's was 12.5 weeks)

1223 By March 8, 1974, the average time for FAA to respond to the contractor on RFA's and TAR's was 8.7 weeks and 8.4 weeks, respectively. Despite further warning to respond quickly, FAA's response time increased to 10.5 weeks on outstanding RFA's and to 12.5 weeks on outstanding TAR's. The range in FAA's response time was from 2.6 weeks to 23 weeks for RFA's, and from 7 weeks to 6 months on TAR's. FAA officials consider 2 to 4 weeks normal response time on RFA's and TAR's.

860 FAA later admitted that deficiencies in FAA contract administration were responsible for certain GD schedule delays and cost overruns. Specifically, FAA failed to act promptly on the contractor's requests for clarifying or modifying contract specifications.

CONTRACT MONITORING

549 Although FAA's technical evaluation of the General Dynamics proposal concluded that the government would have to exercise an extremely high effort to monitor the GD contract, FAA did not provide for program reviews in the contract and did not respond promptly by conducting these despite repeated warnings of contractor difficulties. In addition, FAA inspectors

assigned to the contractor's plant were not provided with the technical
discussions
evaluation of the contractor's proposal to assist them in identifying contractor weaknesses and detecting early signs of schedule delays and cost overruns. It also appeared that when FAA inspectors were reporting contractor difficulties limited action was taken to determine the seriousness of the problem and correct the problem.

549 FAA's technical evaluation of the GD proposal in December 1972 concluded that the government would have to exercise an extremely high effort to monitor the contractor. FAA, however, failed to provide for
775 regularly scheduled program reviews to monitor contract progress, costs, and schedules; to identify program deficiencies; or to initiate immediate remedial action and follow up.

759 FAA inspectors visiting the contractor's facilities noted early cost overruns and schedule slippages and recommended in October and
771 December 1973, and again in January 1974, that program reviews begin immediately. Again in April 1974 (16 months into the contract), with
792 $4 to $6 million in cost overruns and 9 to 10 months schedule delays reported, FAA inspectors again recommended a program review. The
796 inspectors noted that a program review still had not been held even though the contractor unilaterally requested a review in March of 1974.

805 On May 22-23, 1974, an FAA team reviewed the contract status, plans and revised schedules and concluded that no confidence could be

placed on the ability of GD to deliver radars even within the 9 month delays estimated by the contractor, and recommended that (1) FAA review

807 the subcontractor's design and test schedules with GD and the French subcontractor and (2) FAA conduct monthly program review with the contractor.

Discussion These recommendations were ignored.

On May 28-30, 1974, FAA inspectors reported that GD had a mediocre

822 investment and the effort expended was less than satisfactory. In addition, the inspectors reported that there was little confidence in GD's ability to control timely delivery of subcontracted material and that GD lacked the personnel who were familiar with FAA specification requirements.

On May 31, 1974, GD defined cost and schedule problems and reported

817 the cost to complete at $33.7 million -- almost twice the original target price and $14.5 million over ceiling price -- and a nine month schedule delay. One month earlier, FAA inspectors had estimated only a $4 to $6 million cost overrun.

826 On June 6, 1974, an FAA official reported that GD had been remiss in reporting major problems to the FAA in accordance with contractual requirements.

827 On June 10, 1974, FAA issued a letter to GD asking why the contract should not be terminated for failure to meet schedules and maintain progress under the contract. GD responded to the FAA letter 11 days later.

GD attributed the slippage to: specification conflict and incompatibilities,
827 changing the type of contract from a cost to fixed price incentive,
increased lead times for purchased parts, and faulty contract administra-
833 tion procedures as evidenced by FAA's management of the program and FAA's
failure to respond in a timely manner on requests for specification
clarifications and changes.

In a June 13, 1974, letter to the Director of Airway Facilities,
Texas Instruments (TI) then successfully producing ASR-8 equipment under
829 another FAA contract, offered to build the radars and antennas for the
same price and within the same schedule as provided in the GD contract.

QUESTIONABLE PRACTICES IN MODIFYING CONTRACT - DOT FA73 WA-3228

Shortly after FAA notified GD that the ASR-8 contract might be terminated for GD's failure to maintain satisfactory progress, certain events occurred which, in effect, caused the government to accept the blame and responsibility for contractor cost overruns and schedule delays. Instead of paying about $360,000 for each ASR-8 system, FAA modified the contract to a cost type contract and agreed to pay about $10.4 million for one radar system, $2.4 million for 40 antennas, plus give the contractor $1.5 million worth of residual equipment.

FAA Visits to Contractor Facilities

1581 Between June 28 and July 3, 1974, the Director of Airway Facilities

Service and Director of Logistics Service met with GD officials in Florida. These officials were unable to provide a trip report or record to show the purpose of these meetings.

However, the Director of AAF indicated that he and the Director of ALG visited GD's plant to make a physical inspection of the facilities and to review parts lists and materials ordered and on hand. After looking at the prospects to complete the contract, they concluded that GD couldn't produce the radars within reasonable costs or within an acceptable delivery time frame. This official also indicated that in a meeting with two high-level GD officials the following matters were discussed:

(1) GD needed more money and a longer time frame,

(2) Having GD subcontract with Texas Instruments to buy the radars and sell them to the FAA,

(3) GD stated that termination for default was not an acceptable alternative,

(4) GD was interested in remaining in the radar business.

On July 8, 1974, the FAA technical officer rebutted GD's response to the "show cause" letter stating that the original specifications were and still are acceptable to the government; that GD's splintered operations
944 resulted in an overdesigned model and cost overruns, and that the only changes in the scope of work were at the request of GD. The technical officer also attributed a 3 to 4-month justifiable schedule slippage to FAA's delay in processing contractor request for specification changes.

According to an FAA document, on July 10, 1974, FAA received a verbal
951 proposal from GD. Again, FAA officials stated that no record on the details of this proposal exists.

On July 17, 1974, the Director of Airways Facility Service instructed the technical officer to write an alternative action paper advocating: (1) the rationale for procuring a prototype system, (2) on approaching GD for a proposal for procuring the prototype and 40 additional antennas, and (3) summarizing the verbal proposal presented to FAA as of July 10, 1974.

According to FAA, the decision to modify the GD contract for 1 radar and 40 antennas was made somewhere in the July 1 to July 15 time frame.
1706 According to FAA, it is evident from the record that the decision had already been made by the July 17, 1974 conference.

Sometime between July 17 and July 25, 1974, the contracting officer coordinated with the technical office who had earlier attributed some schedule slippage to FAA, and together prepared an alternative action
859 position paper on the ASR-8 contract. The paper recommended procuring 1 ASR-8 and 40 antennas, since according to the contracting officer, he was directed to include 1 radar and 40 antennas in his recommendation. The paper did not contain, as instructed, a summary of the July 10, 1974 GD verbal proposal.

Furthermore, the alternative action position paper, while recommending
859 modification of the GD contract, also recommended that the required number of ASR-8 radar be procured under a new contract with Texas Instruments.

On July 23, 1974, FAA's General Counsel's office stated that it
872 was not taking any position on the alternative action position paper until technical comments were received. In the end, FAA's General

Discussions

Counsel never officially expressed an opinion on the appropriateness or validity of positions taken by the contractor or the government, and FAA never formally replied to the GD response to the "show cause" letter. (FAA's response apparently was in the form of a cost type modified contract for 1 radar system plus 40 antennas for $12.8 million).

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1756

In mid to late July 1974, the directors of Airway Facilities Service and Logistics Service, the Deputy Chief Counsel, the Associate Administrator for Administration and the Deputy Administrator met to decide on the direction to take on the General Dynamics contract. The Deputy Administrator said he adopted the alternative action position paper (prepared sometime between 7-17 and 7-25) which recommended procuring a prototype radar and an additional 40 antennas. (See Analysis of FAA's Rationale for Modifying the GD Contract - Chapter 7).

859

FAA has no records or minutes of this meeting. Therefore, it is impossible to determine if other alternative positions were presented. It is impossible to determine if full or partial termination were actively considered. It is also impossible to determine, at this time, how the $12.8 million figure was arrived at.

1749

According to the Deputy Chief Counsel, a general discussion of various alternatives occurred at this meeting. The Deputy Chief Counsel stated that he advised on the likelihood of successfully sustaining a default action against General Dynamics. The Chief Counsel's office also advised that while a basic case for default could be made, the

1749 likelihood of ultimate success was questionable, based on evaluations of FAA's actions during the contract period which were supplied by other participants.

According to another official at this meeting, termination was briefly mentioned at the meeting but because the General Counsel's office had not received FAA's technical comments on GD's position GC could not really respond on the matter. According to this FAA official, the people at the meeting couldn't answer most of the questions being asked about the recommended course of action, including the question on the total funds involved. This official said it was difficult to question the rationale for paying additional money for one radar because the Director of ASF was sure of his wants for the radar.

One official at attendance to this meeting stated that he was ill prepared for the meeting because it wasn't his contract and he didn't understand at the time the purpose of the meeting.

Another FAA official at this meeting stated that termination for default was discussed but there were legal and political implications which might tie up later procurements of the ASR-8's.

Discussion According to the former Deputy Administrator, he adopted the recommendation of the alternative action position paper to buy a radar from GD and procure the remainder from Texas Instruments in order to get the radars into the field while maintaining competition. At the July 1974 meeting with the directors of Airway Facility Service and Logistic Service, the FAA Deputy Chief Counsel, the Associate Administrator for Administration and the Deputy Administrator, it was determined that a maximum of $12-13 million would be negotiated with General

Dynamics for the one radar and 40 antennas. The FAA Administrator at the time, was also notified and concurred with this course of action immediately following this July meeting.

Discussion

The FAA Deputy Administrator said he was not aware of FAA's technical rebuttal to the GD response to the "show cause" letter, or the paper prepared by General Counsel which stated that (1) it was not taking any position until technical comments were received, (2) the alternatives paper did not present the disadvantages associated with the recommended course of action and (3) the disadvantages should be brought to the attention of the FAA Administrator.

Discussion

The Deputy Administrator believed that the presentation to him included an analysis of when the contractor could perform, but he was not presented any information concerning changing the contract from fixed price to a cost type contract. There is a question as to whether DOT approval was given.

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Discussion

FAA's Deputy Administrator said that the DOT had approved, at the Under Secretary's level, FAA's approach in the ASR-8 procurement program. This included proceeding sole source with Texas Instruments and "must have included" procurement one radar and 40 antennas from General Dynamics. The Deputy Administrator also said that FAA's proposal "must have" been reviewed by TSARC, but he did not have any evidence of this review.

To be sure, the DOT's Associate Administrator for Administration said he was told by the FAA Deputy Administrator that FAA planned: (1) to terminate GD's contract action for all radars except for some antennas and (2) to buy the ASR-8 radars from Texas Instruments at the same price and schedule as under the GD contract. The FAA Deputy Administrator wanted to know if an acquisition paper would be required. The Associate Administrator said that he then asked the DOT Under Secretary about this requirement. The Under Secretary replied that he was already familiar with the Texas Instruments procurement and no acquisition paper was necessary.

Discussion

At this time, the former Under Secretary of Transportation who awarded the ASR-8 contract to GD, was now a Corporate Vice President of GD and was under contracto to act as a part-time consultant to the Secretary and Under Secretary of Transportation.

Discussion

The DOT Associate Administrator said he had no knowledge of subsequent FAA action on the GD contract including its initial modification, its finalization in March 1975, continued problems in July 1975, or termination in November 1975. He also said that if anyone in the Department would have discussed the matter with FAA, he would have known. This official said he coincidentally learned about GD not producing the antennas from some Texas Instrument officials who mentioned they were going to get an antenna contract from FAA.

Discussion

When questioned in July 1976, the DOT Associate Administrator contended that FAA wasn't required to submit the contract through the Transportation Systems Acquisition Review Council (TSARC) even though the order establishing TSARC became effective September 7, 1972. Therefore, he said, no waiver for the GD action was necessary.

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In a December 27, 1972, memo to the Secretary of Transportation on another radar contract, subsequently, awarded in January 1973, the same DOT official stated that: "Under our source selection procedures, the Secretary should have been the source selection official in this procurement. However, FAA had interpreted (improperly in our judgment)

certain temporary exceptions to the procedures to mean that the procedures
538 would not apply to any procurement action initiated prior to March 1, 1972. As a consequence, this proposed selection has been made within FAA according to the old, now superceded, FAA rules."

Discussion

The DOT Associate Administrator estimated that 8 or 9 waivers of the TSARC review requirement have been granted by the Department on other acquisitions.

On August 8, 1974, GD submitted three proposals to the FAA "as a
883 result of the exchange of correspondence." GD proposed one prototype radar plus either no antennas, 40 antennas, or 70 antennas. Cost data on these options was also provided.

On August 15, 1974, FAA prepared a procurement request (PR) for 1 radar system plus 40 antennas at a price of $12,797,388. The Industrial Division of FAA's Logistics Service reviewed the procurement
894 request and commented on August 20, 1974 that they did not know how the drafters of the PR arrived at the figures, but speculated that it represented a total of:

(1) Funds expended to date.

(2) The cost to develop a single radar, and

(3) Terminating costs for the convenience of the government.

900 In addition, the division commented that since the PR states that there was understandings between the directors of Airway Facilities and

Logistics Services and others, these understandings may have formed the basis for the cost figures estimated in the PR. The division noted that no provision for a program review was included although these reviews were considered a necessity because of the past history of the
900 contractor. The division also stated that it would not be considered prudent to proceed on any further ASR-8 work with this contractor without a regularly scheduled program review, and strongly recommended that this provision be included in the contract. The division also recommended that FAA require the contractor to disclose in his reports changes in dates for progress accomplishments, slack time, critical paths, and make up action. FAA, however, failed to include either provision in the contract modification.

Letter Modification

894 On August 20, 1974, the PR was signed for $12,797,388 for a radar and 40 antennas. The next day, GD submitted a cost proposal to FAA to build one radar and 40 antennas for $12,799,987. The proposal stated that
903 it would be valid until August 22, 1974.

927 On August 24, 1974, FAA modified its contract with GD. A comparison of major items that changed include:

| | ORIGINAL | MODIFIED |
|---|---|---|
| Type of Contract ..... | Fixed Price with Incentive | Cost |
| ASR-8 Radars ..... | 37 | 1 |
| 567 Cost ..... | $18.2 Million | $12.8 Million |
| Delivery - 1st Radar ..... | January 1975 | January 1976 |
| 927 Payment ..... | Government/ Contractor Costs shared 80/20 until delivery | Gov. pays 100% of all costs since date the contract was awarded |
| Contractor Reports ..... Required | Monthly Status Reports<br>Cost Status Reports<br>Subcontractor Cost Trend Reports<br>Overhead Rate Report<br>Production Progress Reports | Monthly Status Reports |

Besides agreeing to pay almost 30 times more to GD for one radar with still untested features even when it had already decided to contract with Texas Instruments to build ASR-8's for the same price and within
927 the same delivery schedule as the original ASR-8 contract, FAA changed the GD contract from a fixed price to cost type contract.

With a cost type contract the contractor is entitled to reimbursement for all costs for the contractors best efforts on the contract. Under a fixed price contract, the government is not liable for the
iscussion contractor's cost on undelivered work and is entitled to the repayment

of any progress payments. Had the contract remained fixed price, costs due to GD's inefficiencies would have had to be absorbed by the contractor.

Discussion

The conversion to a cost type contract seemed to benefit only the contractor.

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The change to a cost type contract also allowed the contractor to receive a $2.376 million lump sum payment for costs incurred by the contractor since the date of the award. Under the original contract, 20

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percent of the costs incurred by the contractor were not to be reimbursed until the contractor completed delivery under the contract.

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The FAA General Counsel Contracts Division Chief also questioned the appropriateness of FAA agreeing to this type of arrangement in August 1974 and stated to the Chief Counsel, "I know, off hand, of no authority for us to reform a contract in that manner."

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The FAA's General Counsel office stated that although this contract modification did not convert the contract from a supply contract to a development contract, the change to a cost type contract indicates that there was uncertainty involved in contract performance of such magnitude that cost performance could not be estimated with sufficient precision to permit use of a fixed price contract. This degree of uncertainty in contract performance is also an indication that certain development efforts could be involved in the contract work.

937 From the time the telex (Modification 9) modifying the GD contract was sent on August 24, 1974, until the definitive contract modification
992 was signed on March 27, 1975, FAA management over the contract remained without guidance.

On October 7, 1974, six weeks after FAA modified the GD contract, FAA inspectors at GD facilities reported that there appeared to be a
1594 lack of concerted effort by GD to meet their established deadlines and it was most likely that GD would push schedule deadlines forward as they had in the past.

In November 1974, it became evident that GD was having problems
1596 meeting the antenna and radar specifications and in January 1975, FAA was again reporting schedule delays of two months. Monthly meetings were
1598 suppose to be held in Orlando and Washington in an effort to keep abreast of all problems and avoid any potential delay. But, they didn't
1145 materialize until a contract program review meeting with GD personnel was held in early February 1975. At this meeting, it again
1071 became questionable whether GD could deliver equipment meeting the contract specifications within the delivery schedule. There were a
1738 number of serious unresolved problems on (1) interpreting contract
969 requirements for the antenna, (2) test procedures and location of test
1145 facilities and (3) others. On February 7, 1975, an FAA inspector reported that the "contractor is buying time." By the end of February 1975

1600 FAA determined that GD was 5 months behind schedule but that GD had the technical capability and corporate desire to deliver on schedule, and that GD was willing to absorb additional costs to complete - estimated
977 at $2.1 million over ceiling. Also in February 1975, the Contracting and Technical officers determined that the contractor's estimates were considered reasonable for the completion of the one system being
972 furnished, and by continuing with GD future procurements would be competitive and the FAA would be able to recoup the monies expended for this procurement through lower equipment prices.

Evidently based on this determination, FAA on March 27, 1975, signed a cost reimbursement contract with GD for $12.8 million. Within
992 the next two months, FAA reported that the antenna was not manufactured to drawings, numerous procurement and manufacturing shortages were reported, and the specifications might have to be revised for GD to meet schedules.

On May 14, 1975, FAA's Assistant Chief Counsel for contracts noted that General Dynamics had expended $9.8 million out of the $12.8 million
1020 ceiling and it seemed that GD could not produce the required spec antennas and radar within the ceiling, with a reasonable guess being $14-$15 million. It seemed clear to him that the contractor was attempting to cut back performance and/or its obligation, in order to save money. Recent attempts by the contractor to degrade the spec seemed to be an

effort by the company to reduce costs at FAA's expense. He also reported that given the history of this contract, GD would probably seek to have
1020 the FAA fund part or all costs in excess of the $12.8 million ceiling. The company may very well regard FAA directions to follow specifications as changes in, and additions to, the contract requirements for which it would claim entitlement to an adjustment in the contract price.

The Counsel recommended that FAA find out exactly where GD and FAA stood on this contract. If there was going to be an overrun which
1020 FAA would be asked to cover, the sooner FAA knew the better. He also recommended weekly monitoring and, since the radar would not be used operationally in the system, recommended that contract termination be considered.

1620 On June 20, 1975, FAA reported that the radar and the antenna scheduled deliveries had been delayed from 3 to 5 months.

FAA's ADMINISTRATION OF THE CONTRACT AFTER JUNE 1975

As a result of a continuing disagreement over contractual requirements
1014 for the antenna which began in April 1974, (the modified contract did not clarify the issue) GD effectively stopped most work on radars and antennas in Mid-July 1975 and asked for $2.1 million to complete antenna development.

In late July, the FAA directed the contractor to furnish the items in
1072 dispute at no additional cost, but the contractor appealed the decision before the DOT Contract Appeals Board (DOTCAB).

GD also advised FAA in July 1975 that it (1) did not plan to
1034 compete in the domestic or international radar business; (2) wished to terminate the contract by July 31, 1975; (3) claimed the government did
1040 not need the radar as the design offered no new innovations; (4) that it would however, continue to provide the equipment, but would require significant waivers to the specifications. GD stated that FAA could
1068 procure an ASR-8 from TI for $300,000. GD also estimated that the
1075 $12.8 million ceiling would be reached in September 1975, well in advance of any significant deliveries of equipment.

Agency Alternatives

In July 1975, with knowledge of significant schedule slippages
1040 in both radar and antenna deliveries, and that the antennas were operationally unusuable at the time, the FAA considered several courses of action.

I. Termination for default

Advantages

(1) The government would not have to pay settlement costs which could run up to several hundred thousand dollars.

1041 (2) Cost avoidance of about $650,000 would be realized by discontinuing work (Contract expenditures and obligations were about $12,150,000).

Disadvantages

(1) Legal appeals by the contractor.

II. Termination for Convenience

(Similar to termination for default in a cost type contract except the contractor would be entitled to settlement costs).

Advantages

(1) Cost avoidance of $650,000.

(2) No company pressure or legal entanglements.

1042 Disadvantages

(1) Settlement costs would be incurred by the Government.

(2) Justification of terminating contract for antennas would be difficult.

III. Termination for Convenience (Predetermined Settlement)

1042 Contractor discussed immediate termination in July 1975 with a negotiated settlement (around $10.8 million). This would prevent further incurrence of costs and provide some recoupment from the contractor to obtain the required antennas from another source.

Advantages

(1) Possible recoupment of program funds to apply to new antenna purchase.

(2) No legal entanglements.

Disadvantages

(1) Negotiating an acceptable settlement.

IV. Continue with Present Contract

This would require GD to deliver one radar and 40 antennas and cause GD to incur significant losses over contract ceiling of
1043 $12.8 million. FAA believed that GD would try to recoup some of this overrun through the claims route. FAA also believed that if FAA remained firm, GD would engage in a legal battle over the antennas involving another $2 million. Finally, there was the distinct possibility of receiving unusable hardware as indicated by the test data, the requests for waivers, and the contractor's attitude toward the radar business.

Advantages

(1) None

Disadvantages

(1) Possibility of never receiving operationally usuable equipment.

(2) Possibility of incurring additional cost in excess of $12.8 million.

1044 (3) Possibility of legal entanglements.

(4) Possibility of significant delays to this and other programs.

FAA Actions

As a result of the July 1975 meeting with GD officials, and GD stoppage of work on the radar and antennas except for an engineering
1032 study, FAA decided to stop paying the contractor for his costs

incurred after May 23, 1975. Paradoxically, FAA also tried to get GD to continue with the present contract. FAA General Counsel's office
1032 concurred with the FAA attempt to demand performance from GD after July 1975. FAA's Logistics Service asked General Counsel if they had the right to withhold payments under the contract, to which the General Counsel's office replied that under a cost type contract, they did not have that right while the contract continued to be in effect.

Nevertheless, by October 28, 1975, FAA had not paid 5 vouchers totalling $798,322. GD advised FAA that this action was in breach of contract and that legal action might pursue. Also, GD stated it did
1146 not intend to furnish a GD manufactured ASR-8 radar. FAA contended that GD had a contract; therefore, it should proceed. On November 7,
PR #72 a FAA inspector continued to report no work on the contract.

On November 12, 1975, GD stated that additional waivers to antenna specifications would be required, that either $2.1 million be
1116 provided to finance antenna development until DOTCAB ruled on the contractors appeal, or the Government furnish $1.8 million, in which case the contractor would drop the legal proceedings.

FAA counteroffered with a choice between proceeding and an $8.8
1147 million total contract termination. GD responded by saying it would not

1117 be willing to accept a $4.0 million loss ($12.8 - $8.8) on the contract but would agree to a $10.4 million termination, in addition giving FAA all residual materials. GD requested an immediate decision because of vendor and subcontract hold-orders.

On November 25, 1975, FAA decided to issue a "show cause" letter as the first step toward a possible termination for default. However,
1125 before the "show cause" letter could be issued, GD advised that it considered the Government in breach of contract for failure to make payments and for failure to increase the cost of the contract to finance the requirements. As a consequence, GD further advised that it was discontinuing all work and terminating all suppliers.

1128 On November 25, FAA terminated the contract for default in its
1130 entirety.

On December 5, 1975, the termination was submitted to the DOT
1132 Contract Appeals Board.

On January 14, 1976, FAA estimated the cost for GD to meet the
1152 contract requirements at $23 million -- almost double the price agreed to 9 months earlier.

Agency cost data on the Contract follows:

COST DATA

CONTRACT DOT FA 73 WA 3228

GENERAL DYNAMICS

| | PERIOD | NUMBER VOUCHERS | SUBMITTED | PAID |
|---|---|---|---|---|
| 1733-34 | 1-12-73 - 3-26-75 | 23 (Fixed Price) | 6,983,953 | 6,983,953 |
| | 3-27-75 - 7-15-75 | 4 (Cost) | 3,619,029 | 3,619,029 |
| | 7-16-75 - 5-28-76 | 10 (Cost) | 1,866,169 | |
| | Total Costs on GD Contract (as of 5-28-76) | | 12,469,151 | 10,602,982 |

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| | | |
|---|---|---|
| 1728 | Estimated cost to repair and overhaul existing antennas that would have been replaced ..... | 200,000 |
| | Cost to reprocure 40 antennas ..... | 4,376,040 |
| 1727 | Estimated cost to Government to litigate negotiate and settle on terminated contract ..... | Impossible for FAA to estimate |
| | Estimated value of equipment at contractors facility ..... | 1,410,000 |

CHAPTER 6

COST REPORTING

Discussion

FAA's program for monitoring this contractor's costs was inadequate. FAA did not establish an adequate cost reporting system for use by this contractor. It also lacked procedures for cost analysis and for using the information to monitor the contractor's overall performance.

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621-24

When FAA awarded the ASR-8 contract to GD in 1973, FAA required the contractor to provide cost status reports, subcontract cost trend reports, overhead rate reports, and production progress reports. However, some of these reports were not actively used by FAA technical and procurement personnel to evaluate and compare contract costs with performance. It may be that some of these reports contained insufficient information for detailed analysis.

For example, while FAA was predicting $4-6 million cost overruns in May 1974 the cost status report prepared by the contractor showed a $2.3 million cost overrun, but at the same time GD notified the FAA that costs would exceed the contract ceiling by $14.5 million. Twenty (20) months later and almost two (2) months after FAA terminated the contract, FAA prepared a detailed estimate of the cost to complete the contract. FAA estimated that costs to complete the contract would

total $23 million -- again, almost double the contract price. FAA, however, was estimating $2 to $3 million cost overruns shortly before the contractor stopped all work.

FAA claimed that the contractor failed to notify the Agency of
826 significant events affecting the contract and costs. FAA, however, should have made sure it was more aware of GD's difficulties by developing a better cost reporting system and by analyzing the information it received. FAA says it needs additional qualified staff to develop a better cost reporting system and to analyze those costs.

As a result of the August 1974 modification to the GD contract, which reduced contract scope and price, FAA deleted the requirement for cost status, cost trend, overhead rate, and production progress reports. The FAA's technical branch stated, however, that it was impractical to expect the technical officer to certify the contractor's invoices without considerably more detail than was supplied by the contractor. He strongly recommended that someone with a cost accounting background accompany the technical officer on a visit to the contractor's facility to substantiate the costs submitted by the contractor.

After visiting the contractor's facility the technical officer stated that it could not certify the contractor's invoices for

payment because the contractor was not meeting internally established performance schedules, thereby making GD's technical progress questionable. The technical officer also found no segregation of costs for people assigned to the FAA contract and another government contract. FAA, however, paid the contractor $1.2 million two weeks later without resolving the technical officer's objections.

FAA failed to provide for or develop independent milestone schedules with target costs which could be used to compare with the contractor's schedules in order to evaluate the contractor's performance.

The contractor prepared and submitted some milestone schedules for completing actions on the contract, but FAA found these schedules difficult to follow and analyze. Sound contract administration dictates, and the Office of Management and Budget now requires for major acquisitions, that executive agencies assess acquisition costs, schedules, and performance experience against predictions and make new assessments where significant costs, schedule, or performance variances occur. Apparently, FAA did not adopt and implement these sound policies.

FAA also failed to analyze or verify the accuracy of the contractor's estimate-to-complete the contract in May 1974. FAA, however, proceeded

to modify the GD contract in August 1974 but without the information necessary to determine if the contractor was going to be able to produce the radars and antennas even within costs provided for in modified contract. The contracting officer stated, in mid November 1974, that it appeared that the contractor's proposed costs would exceed the ceiling price and GD he would not agree to lower the ceiling price. He concluded that the ceiling of $12.8 million was the best obtainable.

CHAPTER 7

ANALYSIS OF FAA'S RATIONALE FOR MODIFYING THE GD CONTRACT

On August 24, 1974, FAA modified its contract with GD (Contract No. FA 73 WA 3228) from 37 radar systems plus 40 antennas to 1 radar system and 40 antennas, from $18.2 million to $12.8 million, from a fixed price to a cost type contract, and from a scheduled delivery of January 1975 to delivery in January 1976.

FAA's rationale for this decision was summarized in the July 17 alternative action position paper. Each rationale is stated, and thus analyzed below:

By purchasing the 1 GD radar, FAA:

Rationale I. Frees the ASR-7 at NAFEC for installation and commissioning as an operational facility.

This investigation disclosed that on July 23, 1974, the Acting Director of FAA's Systems Research and Development Service (SRDS) reported that under no circumstances did the Service believe that the ASR-7 at NAFEC should be traded for the prototype model being developed by GD, but that it was possible the Service could use the GD prototype to analyze improvements being incorporated into it.

The Acting Director also reported that the ASR-7 was needed at NAFEC because:

(1) A great deal of ongoing analysis work depends on the ASR-7.

(2) Any in-service improvement work that may be required for the ASR-7 could not be done unless this particular model was available.

(3) The ASR-7 will be a part of the DABS testing program and would be required for experimentation.

(4) The removal of the ASR-7 could impact, to a significant degree, on the Air Traffic Control improvement program and the DABS work because it would almost surely require a shutdown of those facilities while dismantling took place.

Rationale II. Procuring a prototype for NAFEC will release for installation in the NAS system an additional production version of the ASR-8 which has been scheduled for NAFEC in the current contract. In this way, that system can be utilized to satisfy unexpected and, therefore, unplanned requirements which derive from changing operational demands and/or Congressional requests for locations at which installation of ASR-8 has not been anticipated. Further, if not used for either of these purposes, the equipment will be available

to satisfy emergency needs under civil defense or act of God disasters.
(Apparently, this justification is based on FAA's plan to procure another radar system from Texas Instruments for NAFEC. By procuring a "prototype" from General Dynamics, FAA would release the TI radar scheduled for NAFEC for installation in the National Airport System.

This investigation disclosed that in October 1972, the SRDS program required that the ASR-8 installed at NAFEC be the same ASR-8 system that was to be operational in the field. This was essential in order to test the system for problems and to make improvements. Provided GD had produced 37 radar systems, a GD radar would have fulfilled the SRDS requirements. However, in July 1974, after the GD contract ran into difficulty SRDS reported that under no circumstances would a single GD radar substitute the need for a field model radar.

In December 1974, however, the FAA assigned the General Dynamics radar, supposedly a production radar, to NAFEC rather than one of the production systems being built by Texas Instruments.

In May 1975, two months after the contract modification, FAA reported that, assuming GD successfully delivered an ASR-8 system, there was

considerable question as to whether the GD radar could meet NAFEC and other system testing requirements. It was then recommended that the Acting Administrator and his associates decide on the disposition of the GD system.

On June 13, 1975, SRDS again advised Airways Facility Service that the GD radar would not meet their requirements, and requested a production system built by Texas Instruments. By November 19, 1975, Airways Facility Service had not responded to SRDS request.

FAA frequently called the GD radar system a "production" radar rather than a "prototype" radar for several reasons -- the need for a "prototype" costing $12.8 million was questionable, and FAA's authority to change the contract from a production to a prototype contract in its 1974 modification. FAA's General Counsel raised this issue in July 1974, fearing complaints by other companies that would have submitted proposals on this program if they were aware of the proposed contract change from production to prototype.

The Director of Airway Facilities Service, commenting on the procurement of a single radar system under another contract in May 1972, stated that procuring a one-of-a-kind system, because of its uniqueness, would soon be unacceptable in an operational environment. This one-of-a-kind system would still demand funding for training, logistics support,

reliability, documentation and so forth. Further, the delivery of this single system together with the "updated performance specifications" would not put FAA in a significantly improved position. Yet, two years later, this official recommended procuring a one-of-a-kind system -- the GD radar.

Rationale III. The development of a prototype would provide for a continued competitive base for future procurements. It was anticipated that as a result of future competitive procurements, rather than sole source buys, the FAA would be able to at least recoup the monies expended for this procurement through lower equipment prices.

Although FAA's stated objective was to maintain competition, the contractor told the FAA three months after the finalized contract was signed that it did not plan to compete in the domestic or international radar business, that it wanted to terminate the contract, that the FAA did not need the General Dynamics radar because it did not offer any new innovations, and that FAA could purchase a radar system for $300,000 from TI.

Although FAA apparently wanted to establish competition there are factors questioning the viability of GD as a competitor:

(b) While GD was predicting cost overruns TI was willing to build the same radar under the same schedule and prices as called for in the original contract.

(c) It appears that GD was willing to build only one radar system, thereby handing over to its competition the production contract.

(d) FAA failed to provide for and perform regular detailed program reviews to monitor contractors progress, costs, and schedules, to identify program deficiencies; or to provide for immediate resolution and follow up so as to ensure that GD would meet cost and delivery schedules and ultimately be in a future competitive position.

(e) FAA was told by GAO investigators in January 1975, that a GD vice president had stated that his company could not be price competitive with the other producer and that the future of GD in the ASR business appeared to be zero.

Rationale IV. GD prototype will provide at NAFEC a terminal radar system essentially identical in all operational parameters to those produced by Texas Instruments, thereby making available to NAFEC a unit having the

latest sophisticated design. This equipment could then be used by NAFEC to continue its ongoing terminal radar improvement program.

Our investigation disclosed that before the GD contract was restructured, FAA lacked evidence that GD could produce a radar system meeting FAA's specification requirements. In late May 1974, an FAA team reviewing the contract status concluded that (1) no confidence could be placed on the ability of GD to deliver radars even within the 9 month delays estimated by GD; and (2) the schedule depended on the French subcontractor completing design and tests, with GD monitoring these efforts, and on GD's ability to build and test prototype radars. The team recommended monthly program reviews until the delivery of the first system and that the FAA review the French radar system design with the contractor and the subcontractor. An FAA official stated that the FAA ignored both recommendations.

Another FAA inspector visting GD manufacturing facilities in May 1974, found the investment mediocre and the effort less than satisfactory. He noted that GD lacked personnel familiar with FAA spec requirements.

Despite these reports, a decision was made to restructure the contract rather than terminate.

As early as October 1974, FAA learned that GD's antenna testing program was again behind schedule. Schedules for antenna testing were repeatedly postponed from August to October, then to November 1974, and then to January 1975. On April 4, 1975, FAA learned that the antenna was not manufactured to drawing and found numerous procurement and manufacturing shortages. In May 1975, FAA noted that the radar specifications might have to be revised for GD to meet schedules. Failures in the GD system continued and GD sought to cut back performance. At this time, FAA questioned whether the GD radar could be used by NAFEC to continue its ongoing terminal radar improvement program.

In October 1975, GD stated that FAA was not going to get a GD manufactured radar system.

Rationale V. It was recognized that the prototype was being designed in various areas to meet specified performance requirements in a considerably different manner than the design provided for by Texas Instruments. By comparing designs and reliability, the agency would derive valuable information in terms of detail requirements which may be incorporated in further production contract specifications.

Our investigation disclosed that the improved features supposedly contained on the General Dynamics "Cadillac" radar system (The FAA Deputy Chief Counsel compared the GD radar to the TI radar as a "Cadillac" to a "Model T Ford," respectively) were insignificant.

The features were so insignificant, according to the technical officer, that it would cost GD more to remove the design features than to leave them in. If GD had met FAA requirements the equipment performance would have been essentially identical to the TI radar. Even GD stated in July 1975 that FAA did not need the GD radar as it offered no new features.

Rationale VI. In the GD contract, Government specifications in two areas appeared to be commercially impracticable to develop and would require an adjustment to the contract price and performance time and could impair any Government default action against the contractor.

Also, Government specs contained certain deficiencies which would entitle the contractor to an adjustment in contract price and extension in the performance period.

This investigation disclosed that FAA's General Counsel office stated that they didn't agree with the position that two areas of commercial impracticalities could seriously impair the Government's default action. The only thing that would be effected by the stated impracticalities would be FAA's future litigation position.

This investigation also disclosed that GD did indeed charge FAA with specification conflicts and incompatibilities and delays, and that the ASR-8 specifications were drafted around the ASR-7 built by Texas Instruments. FAA's technical office, in turn, prepared detailed and specific responses to issues raised by the contractor and admitted that FAA was in part responsible for certain costs and a 3 to 4 month delay.

FAA's General Counsel's Office, however, didn't evaluate or respond to the FAA's technical rebuttal of GD's position and didn't express an opinion on the position taken by the contractor or the government.

APPENDIX I

PROCUREMENT REQUESTS PREPARED FOR THE ASR-8 PROCUREMENT

| PR NUMBER | DATE | COST | TYPE CHANGE |
|---|---|---|---|
| WA4M-2-7630 | 12/10/71 | 5,246,000 | Original Request |
| WA4M-2-7630/1 | 1/27/72 | - | Spec Changes |
| WA4M-2-7630/2 | 3/13/72 | - | Spec Changes |
| WA4M-2-7630/3 | 4/24/72 | - | Spec Changes |
| WA4M-2-7630/4 | 3/24/72 | 14,254,000 | Method of Proc. & Quantities |
| WA4M-2-7630/5 | 3/27/72 | - | Spec Changes |
| WA4M-2-7603/6 | 4/24/72 | - | Spec Changes |
| WA4M-2-7630/7 | 4/24/72 | - | Spec Changes |
| WA4M-2-7630/8 | 8/15/72 | - | Spec Changes |
| WA4M-2-7630/9 | 11/20.72 | 2,768,200 | Quantities and Deliveries |
| | | $22,268,200 | |

11-78

APPENDIX II

CHRONOLOGY OF EVENTS INVOLVING FAA PROCUREMENT OF AIRPORT SURVEILLANCE RADARS (ASR-8)

1972

94,377 March 17 - Request for Procurement (RFP) was issued to 62 firms for procurement of airport surveillance radar (ASR-8) systems on a Cost Plus Fixed Fee basis.

238-271 May 11 --- FAA amends RFP to change quantity (from 1 to 31 radars) and method of procurement to fixed price incentive.

357,360,378 May 23 --- Two companies responded, Texas Instrument (TI), a sole supplier of ASR equipment since 1957 and General Dynamics (GD) - assisted by French subcontractor for the system design.

375,387 June 6 --- FAA technical evaluation: TI proposal was best, while GD's was not complete, adequate, and responsive.

402 July 24 -- Due to the lack of competition the DOT directed FAA to request new proposals to be subject to negotiation and audit.

6,474,491

Nov. 20-21 - TI and GD submit proposal for 37 radar systems plus 40 antennas as follows:

| | TI | GD |
|---|---|---|
| 486 Target Price -- | 21,131,000 | 17,160,000 |
| 491 Ceiling Price - | 23,052,000 | 18,720,000 |

6,500,510,513

Dec. ------ FAA recommends TI because of technical superiority and GD's high risk.

1973

63-64 .

Jan. 10 ---- DOT directs FAA to award contract to GD. Both proposals technically acceptable, therefore price becomes determining factor.

67,644,576

Jan. 12 ---- Contract awarded to GD for 37 radar systems and 40 antennas for $18.2 million. Contract calls for first system delivery in January 1975 with final delivery in November 1976.

725,726

June 27 ---- Five months into the GD contract, FAA identified a $1-million cost overrun. FAA considers this normal.

766

Oct. 31 --- FAA modifies and existing contract with Texas Instruments to build 3 ASR-8 systems instead of 3 ASR-7's.

55-66 Oct. 31 - FAA's General Counsel Office legally opposes FAA's agreement to purchase ASR-8's from TI without competition and because the modification was outside the scope of an existing contract with TI.

7-61,771,774 Nov./Dec.- FAA noted significant slippages in GD work schedules ranging up to 25 weeks, unlikely that the delivery of first system will be on time.

1974

561,1559 Jan. ----- FAA reports that contract appears to be in danger of a delivery schedule delay; FAA delays in responding to the contractor's request for action on specifications - will have definite impact on schedules.

1538 Jan. 18 -- FAA reports that it is doubtful that subcontractors can meet GD current schedule because of inaccurate and incomplete design drawings requiring additional time to correct.

1538 Feb. ----- GD sent a team to France to identify and correct problem areas in the design of the ASR.

792 April 1 -- GD notifies the FAA contracting officer of significant cost overruns which could affect delivery schedules. Immediately, FAA officials visited GD facilities where GD confirms a $4-$6

1974

million cost overrun over the contract ceiling and a 6 month delay in delivery.

1519-1611

April --------- FAA has been reminded 17 times by FAA personnel at GD contract facilites to respond to the contractor's requests for specification changes in a timely manner. For example, it took FAA 6 weeks to respond to a request from the contractor to approve a paint color.

801-05

May 14 ------- GD defines cost and schedule problems and proposed a 9 month delay which postponed delivery of first system from 1/75 to 10/75.

806-07

May 22-23 ---- FAA team reviews the contract status, plans, and revised schedules. The team concluded that (1) no confidence can be placed on the ability of GD to deliver radars even within the 9 months delays estimated by GD, and (2) the schedule depends on French subcontractor completing design and tests, GD monitoring these efforts, and GD's ability to build and test prototype and production radars. Recommends:

(1) FAA perform monthly program reviews until delivery of 1st system (Program reviews are not

1974

807 provided for in DOT and FAA procurement regulations).

(2) FAA review review the radar design with the contractor to determine status.

822 May 28-30 ---- FAA visits GD manufacturing facilities and finds the investment mediocre and the effort less than satisfactory. Had little confidence in GD's ability to control timely delivery of subcontracted material. Noted that GD lacked personnel familiar with FAA spec requirements.

817-821 May 31 ------- GD tells FAA it will cost $33.7 million to complete the contract-twice the original contract price and $15.5 million over ceiling price of $18.2 million. Concludes, in that the performance of work on a fixed price type contract has proved to be commercially impracticable. FAA never evaluated or verified the accuracy of these figures.

826 June 1 ------- FAA officials state that GD had been remiss in reporting major problems to FAA in accordance with contractual requirements.

827-28 June 10 ------ FAA issues a show cause letter to GD, asking

1974

why the contract should not be terminated for failure to meet schedules and maintain progress under the contract.

829-30 June 13 ------ Texas Instruments proposes deliver of 37 ASR-8's to the FAA, meeting GD's original price, spec, and delivery schedule.

833-38 June 21 ------ GD responds to FAA letter attributing slippage to:

(1) Specification conflicts and incompatibilities.
(2) Change in the type of contract.
(3) Failure of FAA to act in a timely manner on GD requests for technical changes-directly affecting costs and schedules.
(4) Parts suppliers lead times.

1579-81 Between June 28 - July 3 -- Messrs. Jefferson W. Cochran and Richard Frakes, Director of FAA's Airway Facilities Service and Director of FAA's Logistics Service, respectively, met with GD officials in Florida. There isn't a trip report or record to show the purpose of these meetings, officials contacted, the outcome of these discus-

1974

sions, or who directed that this visit be made. Explanations of visit are inadequate.

844 July 8 ------- FAA technical officer rebuts GD reasons for slippage.

51-57,1706 July 17 ------ Apparently the decision was made to procure one prototype and 40 antennas by this date because Mr. Cochran, Director of Airway Facilities, directed FAA technical officials to write a position paper on (1) presenting rationale for procuring a prototype system (2) approaching GD for a proposal for procuring the prototype and 40 additional antennas (3) stating the areas in which GD radar system exceeds the specs (4) the purchase of 36 systems from Texas Instruments and (5) summarizing the verbal proposal presented to FAA as of July 10, 1974. (This verbal proposal was never explained).

859-71 Between July 17 & July 23 -------- FAA contracting officials prepare a list of alternative actions to take on the ASR-8 contract with GD and recommends procuring a prototype radar -- to be used at FAA's research

1974

center (NAFEC) -- and 40 antennas. Other alternatives considered but rejected were:

(1) Terminate for default.

(2) Continue with present contract.

(3) Continue performance via subcontract.

(4) Continue performance via P.L. 85-804 Extraordinary Contractual Actions to facilitate the national defense.

872-73

July 23 ------ FAA's General Counsel's (GC) office states that it is not taking any position on GD's response to show cause letter until technical comments are received. GC also finds the alternative action paper legally inaccurate, incomplete, and not timely. FAA's General Counsel never expresses an opinion on the appropriateness or validity of positions taken by the contractor and the government and FAA never formally replies to the GD charges. Also, FAA's Research and Development Service reports that under no circumstances should the ASR-7 at NAFEC be traded for the GD prototype.

874

July 26 ------ Total costs estimated by the FAA to terminate -- $5,659,631.

1974

559,1706,1756

July --------- The directors of Airway Facilities Service

1751, 859-71 (J. W. Cochran) and Logistics Service (R. Frakes), the Deputy Chief Counsel (Anderson), the Associate Administrator for Administration (Weithoner), and the Deputy Administrator (Dow), met to decide on the direction to take on the contract. The Deputy Administrator adopts the alternative courses of action paper prepared sometime between 7/17/74 and 7/23/74, which recommends procuring a prototype radar and an additional 40 antennas. The Administrator agreed with this position too. FAA, however, has no records of these meetings, how the $12.8 million figure was arrived at, or why the contract was changed from fixed price to cost reimbursement. DOT was told that FAA planned to terminate the GD contract except for some antennas and to buy the radars from TI. The alternatives paper does not list the disadvantages of procuring a prototype from GD as the General Counsel recommended on 7/23/74.

875 August 2 ----- General Counsel received FAA's technical evaluation of GD's response to the show cause letter for legal review and recommendations.

1974

383-93

August 8 ----- GD submits proposal for three options as a result of exchange of correspondence. This correspondence is not documented. Options include:

(1) 1 prototype radar, no antennas.

(2) 1 prototype radar, 40 antennas.

(3) 1 prototype radar, 70 antennas.

903-913

August 21 ---- GD submits a cost reduction proposal from $18.2 to $12.8 million for 1 radar and 40 antennas. (Original contract called for 37 radars and 40 antennas).

927-33

August 24 ---- FAA notified GD to produce 1 ASR-8 and 40 antennas for $12.8 million. Formal modification will follow. FAA deletes requirement for cost status reports, subcontract cost trend reports, overhead rate reports, and production progress reports. Reasons given for change in contract:

-- Provide NAFEC with radar.

-- Broaden competitive base for future procurements.

-- Faulty FAA contract administration procedures.

1974

)40-1
940-4 Sept. 23 ----- FAA agreed to procure 40 ASR-8's from TI on a sole source basis for about $360,000 each.

1596 Nov. --------- FAA reports problem with GD antenna, parts specifications, and prototype radar.

947 Nov. 12 ------ Director of FAA's Systems Engineering Management stated that it is mandatory that the ASR-8 going to NAFEC come from Texas Instruments, who was producing the operational ASR-8.

954 Dec. 13 ------ Director of FAA's Airway's Facility Service stated, however, that NAFEC will receive the GD ASR-8.

iscussion Mid-December - GAO officials visit GD facilities and officials and are advised by an engineering vice president that the future of GD in the ASR-8 market appears to be zero because GD could not be price competitive with other producer.

1975

1599
iscussion January ------ GAO verbally advises FAA of discussions with GD vice president. FAA officials report numerous technical problems during equipment testing and up to a 2 month delay in delivery.

1975

1600-01 February 7 --- FAA reports that "the contractor is buying time."

February 14 -- FAA official monitoring contractor progress at plant recommends withholding payment for inadequate progress.

974,983,982 Late Feb. to Mid-March ---- FAA team finds GD 5 months behind schedule with no change in final delivery. However, GD has the technical capability and corporate desire to deliver a radar and 40 antennas.

March 26 ----- FAA official at GD facility again recommends withholding payment on voucher for inadequate progress.

092 March 27 ----- Definitive contract for 1 radar and 40 antennas is signed. Contract is changed from a fixed price contract to a cost type contract.

1734 March 31 ----- Under cost provisions, contractor submits voucher for $2,376,938 for costs incurred since date of original contract. FAA pays voucher two weeks later.

1012, 1609 April 4 ------ FAA reports antenna does not comply with contract specifications.

1975

)20-22

May ---------- FAA reports specs might have to be revised for GD to meet schedules, system failures continue. Appears that GD is seeking to cut back performance and its obligation. Recommend FAA determine contractor intentions and FAA position.

June 2 ------- FAA reports delay of radar and antenna, a fact, -- from 3 to 5 months.

June --------- TI delivers first ASR-8 for $380,000.

1027

June 13 ------ Director of FAA's Research and Development Service stated that the TI (ASR-8) is necessary to satisfy NAFEC's testing program and for performing in service improvements. GD prototype was to be used for proposed "efforts of a feasibility nature."

28,1033,1734

July 15 ------ FAA pays GD $1,242,091 despite technical officers refusal to certify that the work performed is satisfactory from a technical viewpoint and that costs claimed appear necessary for performance.

034,1040

July 16 ------ GD advises FAA that (1) GD does not plan to compete in domestic or international radar business, (2) GD wishes to terminate contract

1975

1068-69

1075-76

or receive an additional $2.1 million to complete antenna development, and (3) FAA does not need the GD radar because it does not offer any new innovations.

062,1622,1625
1734

Mid-July ----- GD has closed down all work on contract except for reviewing antenna design problems. FAA stops payment on vouchers.

143-44

Late-July ---- FAA finds no advantages to continue with contract.

1055

August 28 ---- Director of Systems Research and Development Service (SRDS) reported that the decisions to provide the GD (ASR-8) to NAFEC was based on factors not relevant to FAA requirements and that the funding provided by SRDS does not cover the cost of the GD system.

1625

Late October - FAA reports no work on radar since July 1975, changes are needed in antenna design. Earliest estimate for testing redesigned antenna is 5 months. GD states it does not plan to furnish a GD manufactured radar.

t #72

November 7 --- FAA reports no work on the contract.

6-17

November 12 -- FAA proposes that GD accept a termination for [illegible]

1975

1128 November 25 -- GD notifies FAA that it is terminating suppliers for breach of contract (stopped payment on vouchers).

1130 November 26 -- FAA issues termination for default notice to GD.

1132 December 5 --- Appealed by GD before DOT appeals board.

1976

1152-58 January 14 --- FAA estimated cost for GD to meet contract requirements at $23 million -- almost double the modified contract.

Mr. RIDER. The airport surveillance radar—eighth generation, frequently referred to as the ASR-8, is part of the national airspace system and is the newest airport terminal radar system. It provides radar coverage to air traffic controllers over a 60-mile radius which enables the controllers to better detect small aircraft and thus helps avert midair collisions. It also aids controllers by eliminating certain interference caused by weather and ground objects.

FAA PROCUREMENT

The FAA awarded an $18.2 million contract to the General Dynamics Corp. in January 1973, for 37 radar systems plus 40 antennas. Twenty months later, after the company ran into difficulty producing the equipment and the costs to complete the contract were estimated at $33.7 million, FAA modified the contract.

FAA reduced the number of radar systems from 37 to 1 and reduced the contract price from $18.2 million to $12.8 million.

Under this revised contract, FAA agreed to pay General Dynamics 30 times the original unit price of the radar system even though FAA: (1) Had no requirement for a single General Dynamics radar system; (2) had determined that it could not be used operationally in the field; (3) had stated that it could not replace the "field" ASR equipment used for testing at NAFEC—FAA's research and development facility; and (4) at the same time, had decided to buy the radar system from Texas Instruments at the same unit price and

delivery schedule as provided in the original General Dynamics contract.

FAA also restructured the General Dynamics contract from fixed price plus incentive to a cost type arrangement. Generally, under a fixed price contract, the contractor must produce or return all funds paid by the Government. Under a cost type contract, the Government pays all costs in return for the contractor's best efforts.

FAA's major rationale for this contract modification was to keep General Dynamics competitive with Texas Instruments Corp. in the ASR market and to test some features of the General Dynamics radar model at NAFEC.

Several months after FAA finalized the modified contract, General Dynamics informed FAA that: (1) It wanted to terminate the contract; (2) it did not plan to compete in the radar market; and (3) FAA could buy the same equipment from Texas Instruments for about $300,000 per unit. The contractor, for all practical purposes, stopped work on the contract, and in November 1975, FAA terminated the contract.

Although General Dynamics did not complete the 1 radar system or the 40 antennas, or even complete the design of the ASR-8 system, FAA has paid the contractor over $10 million, and the contractor is asking for more. The only tangible results are a large number of drawings and parts. Furthermore, FAA has had to go out and reprocure the radars and additional antennas from another source for $19.2 million.

PROBLEMS WITH THE INITIAL AWARD

The radar system contract was awarded to the General Dynamics Corp. despite FAA technical and logistic evaluations which concluded that there were very high risks associated with this contractor's proposals. FAA's evaluation stated that in view of the importance of the ASR equipment to the safety requirements of the national airspace system and the critical need for incorporating quality products therein as rapidly as possible, cost considerations must play a subordinate role.

The FAA evaluation reports noted that although the G.D. proposal was at a lower cost than the other bidder, the high risk factor in the G.D. proposal could significantly impact on the ultimate cost to the Government.

Based on these FAA evaluation reports, the FAA Administrator recommended to the Department of Transportation in December 1972, that the contract be awarded to Texas Instruments at a $4 million higher price than the General Dynamics proposal. FAA estimated, however, that costs avoided by accepting the T.I. proposal would be about $3.5 million.

The Department of Transportation reviewed FAA's recommendation but directed FAA to award the contract to General Dynamics. According to the DOT Associate Administrator for Administration, FAA's management was unwilling to make a detailed, positive determination that G.D. was nonresponsive, and without this an award to T.I. would have been difficult.

In retrospect, it seemed that FAA's technical and contracting offices made detailed analyses of the two proposals and recom-

mended to FAA manangement that Texas Instruments be awarded the ASR-8 contract. FAA management summarized the risks associated with the G.D. proposal and the advantages of selecting T.I.

However, FAA management apparently advised the selecting official in the Department of Transportation in January 1973 that: (1) The General Dynamics proposal was technically acceptable; (2) General Dynamics must be considered a responsible offeror for this procurement; (3) the only risk identified was in meeting the delivery schedule; (4) the equipment would operate satisfactorily as designed; and, (5) the contractor and team of subcontractors had the technical skills and resources to execute the design.

CONTRACT MONITORING

Although FAA's technical evaluation of the G.D. proposal before the ASR-8 contract was awarded concluded that the Government would have to exercise an extremely high effort to monitor the G.D. contract, FAA did not provide for program reviews in the contract and did not conduct them in a timely manner despite repeated warnings from FAA inspectors and field personnel of contractor difficulties. It also appeared that even though FAA inspectors were reporting contractor difficulties, little or no timely action was taken to rectify the problems.

For example, FAA inspectors visiting the contractor's facilities noted early cost overruns and schedule slippages and recommended to the Director of FAA's Logistics Service in October and December 1973, and again in January 1974, that program reviews begin immediately.

Again in April 1974—16 months into the contract—with reports of $4 to $6 million cost overruns and 9 to 10 months schedule delays, FAA inspectors again recommended program reviews. The inspectors noted that a program review still had not been made, even though the contractor unilaterally requested a review in March 1974.

In May 1974, an FAA team reviewing the contract status, plans, and revised schedules, concluded that no confidence could be placed on the ability of G.D. to deliver the radar systems even within the 9 months delays estimated by the contractor and recommended that FAA review the subcontractors' design and test schedules and conduct monthly program reviews with the contractor. According to FAA officials, these recommendations were ignored. Also in May 1974, other FAA inspectors reported that G.D. had a "mediocre investment" and that G.D. efforts expended were less than satisfactory.

On May 31, 1974, G.D. defined cost and schedule problems and reported the cost to complete the contract at $33.7 million—almost twice the original target price and $14.5 million over the ceiling price—and a 9-month schedule delay. About the same time, however, FAA was reporting only $4 million to $6 million cost overruns.

CONTRACTOR DIFFICULTIES

With respect to the contractor difficulties and FAA actions to correct the problems, we noted that FAA personnel located at the contractor's facilities repeatedly reminded FAA engineers to re-

spond quickly to the contractor's request for specification changes because FAA delays adversely impacted on the contractor's schedule.

By March 8, 1974, FAA personnel at the contractor's facilities had reminded FAA's technical office 13 times to respond to the contractor's request for specification changes in a timely manner.

For example, it took FAA 6 weeks to approve the contractor's request to change a paint color and another 5 months to incorporate this change in the contract. FAA technical officials attributed these delays to internal procedures which required various levels of review and frequent subcontracting for analysis and response.

By March 1974, the average time for FAA to respond to the contractor requests for specification changes was over 8½ weeks. Despite additional warning to respond quickly, FAA's average response time increased to almost 11 weeks. FAA officials consider 2 to 4 weeks as normal response time on contractors' requests for specification changes.

FAA later admitted that deficiencies in contract administration were responsible for certain contractor schedule delays and cost overruns resulting from FAA's failing to act promptly on contractor requests.

CONTRACT MODIFICATION

After G.D. reported a $14.5 million cost overrun and a 9-month schedule slippage in May 1974, FAA responded with a June 10, 1974, "show cause" letter to G.D. asking why the contract should not be terminated. On June 21, 1974, G.D. responded and claimed the problems were FAA's fault.

On June 13, 1974, Texas Instruments, the company FAA originally wanted to contract with, and to which a limited contract for three of the ASR-8's had been awarded previously, offered to provide FAA with ASR-8's at the same unit price and delivery schedule as provided in the original General Dynamics contract. FAA accepted the offer and, on September 24, 1974, FAA awarded a letter contract to T.I. to build 40 ASR-8's.

Meanwhile, FAA also decided to modify the G.D. contract and notified the contractor by telex on August 24, 1974, of the modification. The modification was finalized on March 27, 1975.

Terms of the modification—modification 9—to the General Dynamics contract were: First, it changed the contract from fixed price plus incentive to a cost type arrangement; second, by changing the contract type, it caused the Government to forfeit $2.4 million to the contractor; third, it reduced the number of radar systems from 37 to 1; fourth, it increased the unit price the Government must pay for a radar system from $360,000 to $10.4 million; fifth, it extended the radar delivery date from January 1975 to January 1976; and sixth, it eliminated several required contractor reports including the cost status reports, the subcontractor cost trend reports, the overhead rate reports, and the production progress reports.

ANALYSIS OF FAA'S RATIONALE

FAA gave six reasons for this course of action in lieu of terminating the G.D. contract. I have, however, consolidated them into two categories.

First, FAA contended that the G.D. radar was needed at its lab at the FAA Research, Development and Experimental Facility—NAFEC—for the purpose of testing and experimenting with the G.D. design features. Second, FAA said that with G.D., the competitive base for future ASR equipment would be broadened.

As a result of my review of this matter, I believe that there was a questionable need for a $10.4 million prototype at NAFEC. If a prototype was needed, it probably could have been bought cheaper via competitive bid.

My conclusion is based on, one, the director of FAA's Research and Development Service reported in July 1974 that under no circumstances did the Service believe that the ASR-7 at NAFEC should be traded for the G.D. prototype ASR-8; two, the improved features supposedly contained in the G.D. radar were considered insignificant by the FAA contract technical officer. The features were so insignificant, according to this official, that it would have cost the contractor more to remove the improved features from the design than to leave them in; three, a few months after the modification, G.D. officials told FAA that the agency did not need the G.D. radar as it offered no new features.

Although FAA apparently wanted to establish competition, FAA really did not take the time to determine if G.D. was in a competitive position. For example, FAA failed to provide for and perform regular detailed program reviews so as to insure that G.D. would meet cost and delivery schedules and ultimately be in a future competitive position.

At the time the modification was being considered, there were many risks and problems which had not been resolved.

Compare the two companies. While G.D. was predicting cost overruns, T.I. was willing to build the same radar under the same delivery schedule and prices as called for in the original G.D. contract.

By proposing to build only one radar system, it would seem that G.D. was handing over to its competition any future contracts for production.

FAA was told by GAO investigators in January of 1975 that a G.D. vice president had stated that his company would not be price competitive with the other producer, and the future of G.D. in the ASR business appeared to be zero.

FAA's failure to assure itself that G.D. could be and would be competitive for future procurements is evident by contractor statements, only 4 months after the modification was signed, that it did not plan to compete in the domestic and international radar business, and that it wanted to terminate the contract.

A more complete analysis of FAA's rationale is contained in my report submitted for the record.

WHEN DECISION WAS MADE

In response to a June 16, 1976, question, "When was the decision made to modify the G.D. contract for the one radar and 40 antennas?" FAA responded to this subcommittee that, "To the best of our knowledge, the decision was made somewhere in the July 1 to July 15 time frame. It is evident from the record of conversation dated July 17, 1974—previously provided—on this date the decision had already been made."

The Directors of FAA's Logistics Service and Airways Facility Service flew to Florida between June 28 and July 3, 1974, to meet with G.D. officials. Neither official was able to provide a trip report or an official record to show the purpose or results of the trip. They indicated that they wanted to review the contractor's progress themselves, and that they talked to G.D. officials about the situation.

According to an FAA document dated July 17, 1974, and shortly after the trip, FAA received a verbal proposal on July 10, 1974, from G.D. FAA officials were unable to tell from the documentation what this proposal was about.

On July 17, 1974, the Director of Airway Facilities Service instructed the contract technical officer to write an alternative action position paper advocating the approach FAA eventually took in its modification. He also instructed the officer to summarize the July 10 G.D. verbal offer, but that apparently was never done.

Several high-level FAA officials met in mid to late July 1974, and approved the alternative action position paper. However, FAA lower staff people were either objecting or acquiescing.

The technical officer told to help prepare the alternative action position paper wrote a rebuttal to G.D.'s response to FAA's "show cause" letter and admitted FAA's fault for some contract delays. According to this official, he and the FAA Radar Engineering Division advocated termination. The contracting officer who also helped develop the alternative action position paper stated he was told to include the recommendation for 1 radar and 40 antennas in his paper.

The FAA General Counsel Office wrote that it would not take any position on the alternative action position paper and, furthermore, criticized the paper for not declaring disadvantages of this modification approach. Also, this office stated that the Administrator should be made aware of the disadvantages.

The Deputy Administrator, and presumably the Administrator, were not made aware of the above objections.

Finally, when the industrial division of Logistics Service received the request for procurement, they questioned how the $12.8 million figure was determined. They mentioned that there were understandings between the Directors of Logistics Service and Airways Facilities Service and "others."

RESULTS OF MODIFICATION ARRANGEMENT

Problems continued to plague G.D.'s progress on the contract, both before and after the modification was finalized on March 27, 1975.

FAA and G.D. disagreed over the contractual requirement for the antenna. G.D. notified FAA in April 1974 of the antenna dispute, but the matter was not addressed by contract modification 9. As a result, G.D. requested $2.1 million, in addition to the $12.8 million provided for in modification 9.

In late July 1975, the FAA directed G.D. to furnish the items in dispute at no additional cost, but G.D. appealed the decision before the DOT Contract Appeals Board.

Also in July 1975, G.D. stopped most work on the contract, so FAA decided to stop paying the contractor for the costs he incurred after May 23, 1975. FAA's General Counsel Office told FAA's Logistics Service that under a cost type contract it did not have the right to withhold payment. By October 28, 1975, FAA had not paid five vouchers totaling $798,322. G.D. advised FAA that this action was in breach of contract, and that legal action might pursue.

Attempts were made by both FAA and G.D. to negotiate a termination of the contract, but neither could agree to the final dollar settlement.

Finally, FAA decided to issue a "show cause" letter in late November 1975, but before the "show cause" letter was issued, G.D. advised FAA it was in breach of contract for failure to increase the cost of the contract to finance the requirements. Therefore, G.D. advised it was discontinuing all work and terminating all suppliers.

On November 25, 1975, FAA notified G.D. that it was terminating the contract for default in its entirety. The termination is currently under appeal and being reviewed by the DOT Contract Appeals Board.

Mr. Chairman, this concludes my statement. I will be happy to answer any questions that you or other members of the committee may have.

Mr. BURTON. Thank you, Mr. Rider.

In your statement, you say that the contracting officer who helped develop the July 17 alternative action position paper stated he was instructed to include a recommendation for one radar and 40 antennas in his paper. Do you know who told him that?

Mr. RIDER. Mr. Chairman, he did not say who told him that.

Mr. BURTON. He just said he was told?

Mr. RIDER. Yes, Mr. Chairman.

Mr. BURTON. Do you know who ordered the General Dynamics verbal offer of July 10, 1974, to be summarized in the July 17 alternative action position paper and who should have had the responsibility to see that it was included in the paper?

Mr. RIDER. The former Director of Airways Facilities Service, Mr. Jefferson Cochran.

Mr. BURTON. You mentioned a meeting between FAA and General Dynamics officials in Florida. Do you know which FAA officials were involved in these meetings?

Mr. RIDER. There is no record of the trip that was made aware to me. However, in discussing the matter with Mr. Cochran, who is the former Director of Airway Facilities Service, he stated that he met with two General Dynamics officials. They were high-level General Dynamics officials. I can furnish the names for the record: Mr. Iverson and Mr. Goldman.

Mr. BURTON. Who were the FAA officials?

Mr. RIDER. The FAA officials who went down to Florida?

Mr. BURTON. Yes.

Mr. RIDER. Mr. Frakes and Mr. Cochran.

Mr. BURTON. Did these gentlemen have any conversations with you, or make any remarks to you concerning this meeting?

Mr. RIDER. Yes. I talked to one of the officials making the trip, and this official said——

Mr. BURTON. Which official would that be?

Mr. RIDER. That would be Mr. Cochran. He said that he physically inspected G.D. facilities and reviewed parts lists and materials ordered and on hand. He said that after evaluating the prospects for General Dynamics completing the contract, both he and Mr. Frakes concluded that General Dynamics could not produce the radars within a reasonable cost or within an acceptable delivery time frame.

He also said that General Dynamics officials needed more money and a longer time frame to complete the contract.

They also discussed having General Dynamics subcontract with Texas Instruments to buy the radars and sell them to FAA.

Mr. BURTON. General Dynamics was going to subcontract?

Mr. RIDER. They discussed that, according to Mr. Cochran.

Mr. BURTON. Did they mention anything to you about discussions of the contract modification?

Mr. RIDER. No, Mr. Chairman.

Mr. BURTON. These meetings between Mr. Frakes and Mr. Cochran and the people from General Dynamics, and the July 10 verbal offer from General Dynamics which preceded the July 17 alternative action position paper—how interrelated, or how important do these events seem to be, as reflected in that alternative action position paper?

Mr. RIDER. Based on the series of events which were happening at that time and the fact that there is an incomplete record—an official record—on FAA's part as to what occurred at the meeting in Florida, and also there is apparently no official record of the meetings which these FAA officials had with the Deputy Administrator, I would be unable to answer.

Mr. BURTON. In other words, they do not have any official record of how they traded 37 for 1?

Mr. RIDER. Although there were meetings with the Deputy Administrator and Administrator, there was no record of the meetings and what transpired during the meetings. As explained to me, they apparently adopted the alternative action position paper at these meetings.

Mr. BURTON. The time frame in which these meetings were held seemed to be the time that a modification was discussed and agreed to. We would not know whether agreement on contract modification happened at the June 28–July 3, 1974, Frakes/Cochran/General Dynamics meeting. But it is during that general time frame that the modification was agreed to. We have no documents indicating exactly how or where those decisions were arrived at. But were they made in Florida, at that meeting? Whether they were discussed there and then brought back up and discussed further in Washington——

Mr. RIDER. Yes; I have no knowledge——

Mr. BURTON. And they have no documentation?

Mr. RIDER. Yes; they have no records or minutes of the meetings or discussions they held. That is correct. At least, that is what was related to me.

Mr. BURTON. Do you have any idea if there were many facts withheld from the Deputy Administrator when Messrs. Frakes and Cochran presented the alternative action position paper to him later in July?

Mr. RIDER. I discussed with the Deputy Administrator what occurred in the July meetings which resulted in the modification. According to the Deputy Administrator, he was not presented the technical officer's rebuttal to the "show cause" letter, and he said he was not made aware of the General Counsel's comments on the alternative action position paper, which stated that there were no disadvantages to the recommended course of action—to purchase 1 radar and 40 antennas.

Mr. BURTON. So, he was not given any of the downside. He was given an option without the rebuttals to the option or——

Mr. RIDER. He said that he adopted the alternative action position paper, and that paper does not contain the disadvantages to the recommended course of action.

Mr. BURTON. I think a contract change from 37 to 1 would be a disadvantage, right on its face.

Do you know if the Department of Transportation had any knowledge of or approved this modification?

Mr. RIDER. I talked to the former Department of Transportation Associate Administrator for Administration.

Mr. BURTON. Who is that?

Mr. RIDER. That was Mr William Heffelfinger, and I would like to quote what he said, if you don't mind.

When I questioned Mr. Heffelfinger in July 1976, he said that he had no knowledge of the subsequent FAA actions on the General Dynamics contract which included the initial modification 9 action, its finalization in March 1975, continued problems in July 1975, or termination in November 1975. He said that if anyone in the Department had discussed the matter with FAA, he would have known.

This official said that coincidentally he learned about General Dynamics not producing the antennas from some Texas Instruments officials who mentioned they were going to get an antenna contract from FAA.

The Deputy Administrator said that——

Mr. BURTON. Who was that?

Mr. RIDER. That was Mr. Dow. He said that the Department of Transportation had approved at the Under Secretary's level FAA's approach in the ASR procurement program. This included proceeding sole source with Texas Instruments, and he said it must have included, but he did not have any documentation, the procurement of the 1 radar and 40 antennas.

The Deputy Administrator also said the FAA's proposal must have been reviewed by TSARC. I have no knowledge whether the Department of Transportation reviewed or approved the action taken by the FAA.

Mr. BURTON. How much does the FAA, or better still how much does the American taxpayer ultimately stand to lose on this contract, and how much has actually been spent? Could you provide us with "worst" and "best" cost estimates?

Mr. RIDER. Mr. Chairman, this contract has become a very complicated legal issue, and it may take years to settle. FAA could lose quite a sum, but I am sure they will make every effort to try to minimize their losses.

Mr. BURTON. You mean that after they gave away the store they are going to try to get back some of the candy?

Mr. RIDER. I would hope so, Mr. Chairman.

They paid the contractor $10.6 million. I am rounding out figures. The contractor has requested about $1.8 million more. The contractor also has $1.4 million in Government-furnished equipment. Also FAA has had to go out and reprocure 40 antennas. The excess reprocurement cost for the antennas was about $2.1 million.

So it looks like they could lose much more than they have paid. Of course, if they win, they could minimize their losses in the courts.

Mr. BURTON. The fact that they went from a fixed-price contract to a cost type contract is what enables General Dynamics, notwithstanding the fact that they have not really returned much for the investment, to at least attempt in court to collect for additional costs?

Mr. RIDER. I am not a lawyer, but I imagine that will complicate the proceedings.

Mr. BURTON. Well, if it had been a fixed-price contract, they couldn't have done anything. If they did not live up to the terms of the contract, if they didn't deliver the material, they would therefore have to forfeit all claims for reimbursement.

Mr. RIDER. FAA could have terminated the contract for default.

Mr. BURTON. And under the cost type contract, if they can prove that they put forth their best efforts to produce it at a reasonable cost—what were the initial and final cost proposals offered by Texas Instruments and General Dynamics to FAA in the period of negotiations preceding the contract award, and to what extent could the General Dynamics offer be considered what some might call a "buy in"?

Mr. RIDER. On the chart to your left, Mr. Chairman, the initial proposal——

Mr. BURTON. Would that be the top chart?

Mr. RIDER. That is correct. Roman numeral I. The Texas Instruments proposal was about $17.3 million target price, and General Dynamics was $20.4 million. That was for 31 systems.

In December 1972 the best and final offer by Texas Instruments was about $21.1 million and by General Dynamics $17.2 million. That was for 37 systems. Of course, both proposals include the 40 antennas.

I have no knowledge of a possible buy-in, but FAA's evaluation before the contract was awarded stated that the probability of General Dynamics meeting the target price was very low. That is indicated on the chart on the bottom entitled, "FAA's summary conclusions on the ASR-8 proposals."

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Mr. BURTON. You state that at the meeting with the Department of Transportation's Under Secretary who directed the contract go to General Dynamics, FAA went along with this directive, and that in so doing FAA ignored the advice of its own technical experts. Who were these technical experts? Do you know if their opinions were stated at this meeting, and should their opinion have carried a fair amount of weight? Lastly, as part of that, who was representing the FAA at the meeting with the DOT Under Secretary, and who was the DOT Under Secretary?

Mr. RIDER. Put in perspective, the Administrator sent over a memo to the Department of Transportation recommending the award go to Texas Instruments at a $4 million higher price tag. Mr. Cochran and Mr. Comulada, who was a former Director of FAA's Logistics Service, and some of their assistants made a presentation to the Department of Transportation which summarized the risks involved with the General Dynamics proposal and of accepting the Texas Instruments proposal.

However, after this meeting with the Under Secretary of Transportation——

Mr. BURTON. Who was that?

Mr. RIDER. That was Mr. James Beggs. After that meeting on January 3, 1973, Mr. Beggs said that he was advised that the General Dynamics proposal was technically acceptable, the General Dynamics must be considered a responsible offeror for this procurement, the only risk involved was meeting the delivery schedule, the equipment would operate satisfactorily as designed, and that the contractor and team of subcontractors had the technical skills and resources to execute the design.

Mr. BURTON. How would he know how terrific the subcontractors were?

Mr. RIDER. I would assume it would have been in the summary presented by FAA officials, but I do not know that.

Mr. BURTON. I won't ask you what he is doing now. [Laughter.]

The FAA inspectors who detected the contractor's difficulties—how frequently did the FAA inspectors visit the contractors' facilities? What did they usually do on their visits, and to whom specifically did they pass on their findings and recommendations about the need for program reviews?

Mr. RIDER. There are two types of inspectors under the contract. I am grouping them into two types. There is the field inspector who is physically located at the contractor's facilities. FAA had two inspectors located at General Dynamics facilities. There is also the headquarters inspector who visits the contractor's facilities periodically.

Both of the inspectors at the contractor facilities reported biweekly to the contracting officer on the contractor's progress, and these officials noted contractor progress and slippage and FAA delays. One of these inspectors, however, noted that the overall contract progress was difficult to determine with numerous facilities and geographic distances involved. He also noted that the amount of progress was based entirely on information contained within reports submitted by the contractor and by other FAA personnel.

In addition to these two people out in the field, FAA inspectors from the headquarters Logistics Service—the industrial division—made staggered visits about every 2 to 3 months to the General Dynamics facilities and noted cost overruns as early as the summer of 1973 and schedule slippages shortly thereafter.

These inspectors apparently realized the limited capability of the monitoring of a small segment of the contract, and sent reports of their visits to the director of FAA's Logistics Service.

Mr. BURTON. Do you have any idea why in the world the recommendations of the inspectors were repeatedly ignored by top FAA officials?

Mr. RIDER. No, Mr. Chairman. FAA inspectors make brief visits to the contractor facilities. They obtain a general overview of the contractor's progress by reviewing the financial reports, and they are able to identify some of the contractor's problems.

Mr. BURTON. They would identify them, report them back here, and nothing would ever happen?

Mr. RIDER. I don't know.

Mr. BURTON. That is my assumption. It seemed nothing happened.

Mr. RIDER. I don't know if nothing happened, but——

Mr. BURTON. You do not know that anything did happen?

Mr. RIDER. That is correct.

Mr. BURTON. You could not state for a fact that something did not, but certainly you could not prove that anything did happen—that they did act expeditiously when they received these storm signals, so to speak?

Mr. RIDER. The inspectors from Washington went out in the field periodically, and they recommended program reviews. I know these program reviews were not made routinely, as they recommended.

Mr. BURTON. I have two more questions. First, in the contract modification, when we traded 37 for 1, there was also an agreement that certain reports be deleted from the G.D. contract. How significant are those reports?

Mr. RIDER. I would say that the FAA must have felt that the reports were important, or they would not have required them in the contract initially. However, from my discussions with FAA officials, little or no analysis was performed on many of these reports as a means of monitoring the contractor's performance.

FAA officials indicated that they needed certain types of personnel at that time. I think they have obtained some of the personnel who perform that kind of analysis.

After the requirement for the reports was deleted, the technical officer stated that he did not have sufficient information to certify payment on the contract, and he requested that he visit the contractor's facilities, himself. If FAA did not need those reports, it probably should have substituted some reports which it could to better monitor the contractor's progress. As I indicated earlier, an FAA field inspector assigned to the contractor's facilities indicated that progress on the contract was made exclusively by the contractor reports and by other FAA personnel visiting the contractor's facilities.

Mr. BURTON. It took the FAA weeks to approve a contractor's request to change the color of a paint and another 5 months to

incorporate this change into the contract. Then the FAA attributed these delays to internal procedures which require review and frequently subcontracting.

Just for idle curiosity, you do not know whether or not they subcontracted out the decision on whether or not to let them change the paint color, do you?

Mr. RIDER. I do not know that for a fact, Mr. Chairman.

Mr. BURTON. Mr. Stangeland?

Mr. STANGELAND. Thank you, Mr. Chairman.

Mr. Rider, am I to understand that T.I. came in with the low bid on this project?

Mr. RIDER. Initially, in June 1972 they submitted a low bid of $17.3 million, and General Dynamics was the high bidder at $20.4 million.

Mr. STANGELAND. Prior to putting this project up for bids, was General Dynamics in the business of developing radar systems?

Mr. RIDER. Not the type of radar system that the FAA uses for airports. I believe that they were involved in the NASA program, where they made different types of radar systems.

Mr. STANGELAND. Was Texas Instruments the only company in this country that was in that type of business to develop this kind of system?

Mr. RIDER. Yes. They were the only ones that were building ASR equipment. They have been building ASR equipment since 1957.

Mr. STANGELAND. Texas Instruments?

Mr. RIDER. Texas Instruments was building that type of equipment.

Mr. STANGELAND. What kind of review is conducted, then, to determine that a company can deliver? I think you have touched on it pretty generally, but how do they determine whether the company can produce the system they want and make it work?

Mr. RIDER. I can comment generally on that. FAA has certain technical and contract evaluations which they perform, and they are able to make certain determinations by reviewing the proposals made by the competing contractors and then make recommendations based on the proposals. I do not have details.

Mr. STANGELAND. Do you know why there was not an award made in June 1972 based on those prices?

Mr. RIDER. It was rejected by the Department of Transportation based on the assumption that there was inadequate price competition. They made that determination. In fact, Texas Instruments appealed to the Comptroller General, and the Comptroller General sustained the ruling made by the Department of Transportation.

Mr. STANGELAND. Then, the revised proposals—what would account for such a drastic change in the revised proposals of September 1972?

Mr. RIDER. Even though there was an increase in the number of systems——

Mr. STANGELAND. But are they not, June and September, both 31 systems?

Mr. RIDER. No. June 1972 is for 31 systems, and——

Mr. STANGELAND. I am talking about September. There is a drastic change from June to September, but both are for 31 systems.

Mr. RIDER. There was an amendment to the request for proposals which modified the specification requirements. That was done between the June and September time frame.

Mr. STANGELAND. Is it not somewhat unrealistic to look at September 1972 and December 1972 proposals, and you increase by six systems, and you actually decrease the dollars? I am asking for an opinion.

Mr. RIDER. Yes. I believe that FAA officials stated that General Dynamics changed the location for producing the equipment. I think they were going to shift some of their manufacturing facilities from one location to another location—from California to Florida, I believe. In that way they were able to lower their price. There may be other factors that were involved, but I am not aware of those.

Mr. STANGELAND. I guess I have no other questions, Mr. Chairman.

Mr. BURTON. In other words, you have so many, you don't know which one to pick?

Mr. STANGELAND. That is about it.

Mr. BURTON. On page 4 of your statement, you stated Texas Instruments came in with an offer $4 million higher than General Dynamics, but yet FAA estimated that the costs avoided by accepting Texas Instruments would be about $3.5 million. Then that would have been a difference of just $500,000?

Mr. RIDER. Yes, Mr. Chairman.

As part of their presentation to the Under Secretary of Transportation, they——

Mr. BURTON. Is that Mr. Beggs?

Mr. RIDER. Yes, Mr. Chairman. FAA officials indicated not only the competing prices in the proposals, but also indicated other factors such as technical requirements, delivery, and other factors which would increase or decrease FAA's administration of the contract.

For instance, FAA officials said the effort required by the Government to monitor the contract would be extremely high. Therefore, the administrative costs would necessarily be somewhat high.

In FAA's technical evaluation of the best and final offer, there is a schedule showing the details of the breakdown of $3.5 million. I could submit that for the record.

Mr. BURTON. I would like to have that.

[The material follows:]

# COST AVOIDANCE BY ACCEPTING TI PROPOSAL OVER GENERAL DYNAMICS

| | | |
|---|---|---|
| 1. SPARE PC BOARDS (GD PROPOSAL--$10K) | 20K x 37 SYSTEMS | $740,000 |
| 2. NEEDED-ANTENNA FEATURES (FOR INSTALLATION/MAINTENANCE) | 10K x 77 SY. | 770,000 |
| 3. FAIL-SOFT QUAD MTI | 5K x 37 SY. | 185,000 |
| 4. REDUCED SPARE PARTS REQUIREMENT (PARTS PECULIAR/COMMON) - COMMONALITY W/ASR-7 | 20K x 37 | 740,000 |
| 5. REDUCED FACTORY INSPECTION PERSONNEL | | 300,000 |
| 6. REDUCED WASH. OFFICE PERSONNEL & TRAVEL | | 150,000 |
| 7. REDUCED COST REPLACE ASR-4/5/6/7 ANTENNAS | 2K x 40 | 80,000 |
| 8. REDUCED OUTAGE-ANTENNA REPLACEMENTS (EST. INTERIM ESTIMATE ANT. INSTALL. REQUIRED AT HALF ASR HI-DENSITY SITES FOR GD ANTENNA) | 25K x 20 LOCATION | 500,000 |
| 9. REDUCED TRAINING - DUE TO COMMONALITY W/ASR-7 | | SPECIFIC VALUE DIFFICULT TO DETERMINE |
| 10. HIGH DEGREE OF CONFIDENCE IN ON TIME DELIVERY & SPEC. COMPLIANCE | | SPECIFIC VALUE DIFFICULT TO DETERMINE |
| 11. ABILITY OF CONTRACTOR TO PROVIDE DIRECT SYSTEM ENGINEERING FOLLOW-ON SUPPORT | | SPECIFIC VALUE DIFFICULT TO DETERMINE |
| | TOTAL | $3,465,000 |

Mr. BURTON. Basically, the price difference in the initial offer was $500,000. One could say that?

Mr. RIDER. Yes. If you are looking at price alone.

Mr. BURTON. I do not know what else Mr. Beggs could have looked at but price, if every other indication was that General Dynamics was not equal to Texas Instruments, as far as their ability to handle the contract was concerned. In other words, if you left price out, the merits seem to be with Texas Instruments.

Mr. RIDER. That is FAA's recommendation. In retrospect, they looked at the price and the other factors, and they found that the Texas Instruments proposal was the best for the money.

Mr. BURTON. Mr. Beggs differed with the FAA recommendation, and he made the final award to General Dyanamics.

Mr. RIDER. That is correct, Mr. Chairman.

Mr. BURTON. Mr. English?

Mr. ENGLISH. I do not have any questions, Mr. Chairman.

Mr. BURTON. Thank you, Mr. Rider. Thank you very much for restoring our faith in the Government.

Mr. RIDER. Thank you, Mr. Chairman.

Mr. BURTON. Our next witness is Mr. Jerome H. Stolarow, Deputy Director, Procurement and Systems Acquisition Division of the GAO. He is accompanied by Mr. Sam Pines, Assistant Director, and Mr. Leo Weintraub, Audit Manager, Procurement and Systems Acquisition Division, GAO.

Gentlemen, will you swear that the testimony you will give before this subcommittee will be the truth, the whole truth, and nothing but the truth, so help you God?

[Chorus of "I do's" from three witnesses.]

**STATEMENT OF JEROME H. STOLAROW, DEPUTY DIRECTOR, PROCUREMENT AND SYSTEMS ACQUISITION DIVISION, U.S. GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY SAM PINES, ASSISTANT DIRECTOR; AND LEO WEINTRAUB, AUDIT MANAGER**

Mr. STOLAROW. Mr. Chairman, I would like to introduce my two associates that are here with me. Mr. Sam Pines is our Assistant Director in charge of this particular work, and Mr. Leo Weintraub is the Audit Manager.

Mr. Chairman and members of the committee, we appreciate the opportunity to appear at these hearings to discuss the Federal Aviation Administration's acquisition of long-range radar systems—ASR-3's—which was the subject of a General Accounting Office report dated August 25, 1976.

In our report, we were highly critical of FAA's management of this procurement. In fact, we think this is a good case study of how not to buy major equipment because, first, FAA's acquisition strategy was uncertain. They were not sure how they wanted to go about acquiring the new radars.

Second, FAA permitted Westinghouse to buy into this program, in effect limiting competition by other qualified contractors.

Third, after accepting Westinghouse's offer to produce a prototype radar at a loss, FAA awarded a cost type contract and did not monitor the costs. As a result, Westinghouse overran the estimated costs and did not deliver a prototype system.

I would like to discuss, in some detail, the events leading to this program and our evaluation of FAA's procurement.

The need to improve the Nation's air traffic control system became apparent during the mid-1950's because the Nation's airspace was overcrowded and the airports, navigation aids, and air traffic control system had become outdated.

From 1957 through 1964, the FAA had obtained long-range radar systems from the Raytheon Co., which were designated air route surveillance radar—ARSR-1 and 2—to improve control of aircraft en route between terminals.

Further studies of en route air traffic control problems resulted in the appropriation of $6 million in 1969 for the purchase of five more advanced systems to be designated ARSR-3's. This purchase was postponed, however, because the Bureau of the Budget had concern over possible duplication of the FAA system with the U.S. Air Force system.

A joint FAA-U.S. Air Force group, in October 1970, reaffirmed the need for a 112-unit long-range radar system consisting of existing FAA units, U.S. Air Force systems, and some new ARSR-3's.

In February 1971, FAA's Airways Facilities Service prepared performance specifications and a rough cost estimate and in March of 1972 requested proposals for a firm fixed-price contract for 29 units, one being a preproduction unit to be field tested before the remaining 28 would be produced.

This approach was changed in May 1972 when FAA decided to procure a prototype ARSR-3 under a cost-type contract. The FAA contracting officer believed the proposed new radar entailed considerable technical risk and should be viewed as a developmental effort, even though proven subsystems were to be used.

If, in fact, there was considerable technical risk involved, this method of procurement—a cost-type contract for a prototype—was certainly appropriate. We noted, however, that FAA engineering personnel did not agree with the degree of risk involved.

During the period of May through November 1972, negotiations were conducted with four technically qualified contractors who had submitted proposals ranging from $4.5 million to $7.1 million.

On chart No. 1, we show the history of the negotiations on the prototype contract. During the negotiations, it became clear that Westinghouse was proposing a price for the prototype that was less than its estimated costs—that is a loss contract. It not only cut its initial estimated price in half but stated it would absorb $250,000 in costs. This fact was called to the attention of the Secretary of Transportation on December 27, 1972, and we have an excerpt there from the memo calling that to his attention. This went from the Assistant Secretary for Administration to the Secretary of Transportation.

In January 1973, a prototype program was initiated by an award of a $3.5 million cost-plus-incentive-fee contract to Westinghouse Electric Corp.

In August 1973, about 8 months after the contract was awarded, Westinghouse notified FAA that its cost estimate had risen about 100 percent. In order to minimize costs, FAA then reduced the scope of the prototype program and instructed Westinghouse to

proceed at a reduced level of effort to obtain design reports and conduct tests of some experimental component assemblies.

System test, hardware fabrication, onsite installation, and operational tests were all deleted from the contract requirements. Of 69 test areas that were originally contemplated, 11 subsystem tests were performed, and some limited component tests were completed.

In February 1974, the FAA recommended to the Department of Transportation abandonment of the prototype program and requested that it be permitted to proceed with the procurement of 26 production ARSR-3's. FAA stated that no major technical risks remained, and they had design drawings suitable for final fabrication.

In April 1974, the prototype program was formally discontinued. The total paid to Westinghouse was $4.4 million.

The FAA issued a request for technical proposals 4 months later, as the first part of a two-step procurement for production radars. The second step, in March 1975, was for bids on a formally advertised contract. Three contractors submitted acceptable technical proposals—Texas Instruments, Bendix Corp., and Westinghouse—under the first step and subsequently submitted bids.

Westinghouse was the low bidder and, in June of 1975, was awarded a contract to deliver and install 16 production systems. Currently, after some 35 contract modifications, the price is estimated at about $51 million for 27 radar units. We have that summary of the status of the current production on chart 2 there.

Installation, checkout, field testing, and reliability/maintainability demonstrations for the first ARSR-3 radar were originally scheduled for completion in July 1977 but have been delayed until January 1978. The first unit was supposed to go into service in January 1978 but now is expected to go into service in February 1978.

GAO found a number of things that were wrong in the way FAA went about acquiring the long-range radar system.

The agency lacked a sound strategy leading to the award of the production contract for the system. Initially, it was unclear whether there was a need for a prototype radar. But because of the contracting officer's concern over the technical risks involved, FAA contracted for a single prototype which has never been completed.

All major ARSR-3 subsystems had been previously used by the military and others. But a primary purpose of the prototype program was to fabricate and test in operating ARSR-3, because the subsystems had never been combined into an operative system. Thus, integrated system testing was to have been a critical phase of the prototype program.

But the program was prematurely suspended with limited results obtained. Thus, there was no assurance that FAA would obtain satisfactory equipment with a succeeding production contract, although FAA did state the major concerns were resolved in the prototype's completed design drawings.

There was a difference of opinion among FAA personnel as to the technological risks involved in this program, and it was not clear whether or not a prototype system was really required to demonstrate operational capability. The contractor's proposals were based upon detailed specifications prepared by FAA and the

contractors were required to produce the prototype based on these specifications. The use of detailed specifications on a prototype, however, appears inconsistent with the objectives of a developmental effort.

Several Transportation officials appeared to favor continuing prototype development. One official stated that the documentation did not show an adequate level of additional information had been acquired during the prototype design to support truly competitive procurement. Another official cited the attractiveness of continuing the prototype contract and issuing a two-step competitive contract upon its completion because of the availability of a prototype for evaluation.

We believe that it was, and still is, unclear whether or not a prototype system was really required to demonstrate operational capability of the radar. Further, in view of the technical risks that may have been involved which FAA contends were resolved in the prototype drawings, but not operationally, it is questionable whether a production contract should have been awarded.

We in GAO are not technically competent to judge whether or not this was, in fact, a high risk program requiring development of a prototype. What we, in effect, are criticizing, is that FAA never made a clear determination of that risk and then did not design an acquisition program consistent with the risk involved.

The second point we were highly critical of was the possibility, or probability, of a buy-in.

The FAA, in our opinion, also permitted a buy-in by the contractor. While it may be acceptable commercial business strategy to invest in or buy into a program in anticipation of future business, it is incumbent upon the Government to assure that this practice is not used to unfairly eliminate other potential contractors.

In this particular case, Westinghouse submitted a proposal to build a prototype ARSR-3 that was clearly priced below its estimated costs. The FAA, however, aware of this fact, awarded a cost-type contract, let the costs continue to rise, and then let Westinghouse off the hook after paying $4.4 million.

It is probable that this initial contract also put Westinghouse into a favored position for bidding on the production radars because it was able to do much in the way of initial design and engineering work.

While we cannot speculate at what price another contractor—in a competitive environment—would have been able to produce acceptable radars for FAA, the series of events leading to this procurement precluded serious consideration of the other contractors.

FAA did not independently develop a detailed cost estimate of the prototype system it planned to purchase. It had a rough estimate made up previously by FAA's airways facilities engineers, but it did not have a detailed estimate for the prototype procurement. Lack of such an estimate limited FAA's capability to evaluate the reasonableness of the price proposals it received from the contractors.

Although the rough estimates indicated a prototype would cost $7.8 million, the FAA negotiated with four qualified contractors in an effort to reduce their bids which ranged from $4.5 million to $7.1 million.

The negotiations were conducted over several months—May to November 1972—and the contractors reduced their bids several times.

Finally, the contract was awarded to Westinghouse at $3.5 million.

The Defense Contract Audit Agency examined the proposals and pointed out that Westinghouse's normal pricing policy was not to exclude some of the factors that they did exclude in preparing their proposal. The audit agency pointed to the possibility that the voluntary cost reductions might not materialize.

The last point I would like to discuss is the need for information on cost to complete.

Cost-type contracts are appropriate in many cases for developmental projects. But in administering any cost-type contract, it is essential that the agency maintain a close check over estimated cost to complete the work, especially on a contract where the contractor's initial proposal was reduced by 50 percent and it was proposing to absorb a loss.

Periodic updates of estimated costs to complete the contract are needed to provide early visibility of potential cost growth so that remedial action may be initiated. This close check was not accomplished on the prototype contract and, as a result, about 8 months after contract award the contractor surprised FAA officials with its estimate that the estimated cost had risen about 100 percent.

FAA received monthly actual and budgeted cost data and required notification from the contractor, under a limitation of costs clause, of significant cost increases. But Westinghouse was reluctant to submit periodic estimates of the cost to complete the prototype contract because it was not required to do so.

FAA people said that the agency really had no prior advance notice of this condition. They said also that during this period they pressed several times for cost to complete estimates, but since there was no contractual requirement that such estimates be made they did not get them.

Mr. Chairman, in summary, we believe this case, at best, indicates a lack of concern on FAA's part for good procurement practices.

It is difficult to say how much additional costs were incurred by the elimination of any effective competition. Most important, however, is that at this date no radar systems have been delivered for operational testing, and the Government is not yet assured of obtaining an acceptable product.

In its final comments on our report dated November 19, 1976, the Department of Transportation disagreed with our conclusions. They did not agree that any additional costs were incurred, that they permitted a buy-in, or that there is any question about obtaining acceptable systems from Westinghouse. Our analysis of their comments, however, reveals no new information or rationale which would lead us to change our conclusions.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions you may have.

Mr. BURTON. Thank you. Without objection, the charts will be included in the record.

[The material follows:]

# TECHNICAL RATINGS, COST PROPOSALS AND NEGOTIATIONS FOR PROTOTYPE

| | WESTINGHOUSE | BENDIX | G.E. | RAYTHEON |
|---|---|---|---|---|
| TECHNICAL RATING | 86.13% | 86.17% | 79.74% | 81.66% |
| INITIAL PROPOSAL | $7,092,526 | $4,501,184 | $4,553,167 | $6,978,665 |
| NEGOTIATED PRICE | 4,291,494 | 4,029,585 | 4,902,052 | 7,174,497 |
| BEST & FINAL | 3,485,761 | 3,898,061 | 4,601,460 | 6,924,988 |

CHART I

# CURRENT ESTIMATE OF COST TO COMPLETE CONTRACT WITH WESTINGHOUSE ELECTRIC CORPORATION FOR 27 ARSR-3's

| | | IN MILLIONS |
|---|---|---|
| 26 ARSR-3's, DATA AND SPARE PARTS | | $41.4 |
| CHANGES | | |
| ONE ADDITIONAL SYSTEM | $2.5 | |
| PRICE ESCALATION | 3.5 | |
| ADDITIONAL SPARE PARTS FOR DEPOTS | 1.6 | |
| CHANGE FROM FIBERGLASS TO PREFAB STEEL STRUCTURE | .7 | |
| OTHER MODIFICATIONS | 1.4 | |
| TOTAL ESTIMATED COSTS AS OF NOV. 1977 | | ~~9.7~~ $51.1 |

CHART 2

CHART 3

## EXCERT FROM MEMO DATED DEC. 27, 1972
## FROM: ASSISTANT SEC. FOR ADMINISTRATION
## TO: THE SECRETARY

(UNDERSCORING ADDED BY GAO)

"WE DO NOTE, HOWEVER, THAT THE WESTINGHOUSE PRICE WAS INITIALLY PROPOSED AT $7,092,526, & WAS CUT IN HALF DURING NEGOTIATIONS. WHILE THE FAA MEMORANDUM SPEAKS GENERALLY ABOUT THE REASONS FOR THIS DRAMATIC REDUCTION, IT MAY BE THAT WESTINGHOUSE IS "BUYING IN", IN ORDER TO OBTAIN A COMPETITIVE ADVANTAGE ON THE PRODUCTION QUANTITY (ALTHOUGH THE MAXIMUM WESTINGHOUSE PROFIT IS SHOWN TO BE 5%, OR 194,000, WESTINGHOUSE IS ALSO PICKING UP $250,000 IN COSTS, SO THAT ACTUALLY UNDER THE BEST OF CIRCUMSTANCES THERE CAN BE NO PROFIT UNDER THIS CONTRACT)."

Mr. BURTON. Do we really know if FAA ever totally eliminated the areas of risk, so that the ARSR-3 production units could be delivered as specified in the production contract?

Mr. STOLAROW. I do not think that we will know until an operational system is delivered, put into use, and is checked out. At this point in time we cannot be certain that the risks have been eliminated.

Mr. BURTON. Are we all going to be around at the time that that happens?

Mr. STOLAROW. The current estimate is that the first system will be delivered early next year. Whether or not that occurs, I cannot say.

Mr. BURTON. What were the risks involved in the contract, and what were the various alternative methods that the agency could have used to eliminate these risks?

Mr. STOLAROW. As best we can determine, the risks were in putting together a number of systems, subsystems, and components, and in making sure that they all operate together properly and give you an acceptable product. That was the basic reason for a prototype or preproduction model that was originally required. Certainly, in complex electronic equipment, there is a risk that even though you think you have designed a good product, when it is all put together and produced under factory line, does it work properly?

As I said in my statement, if, in fact, this was a high risk, then the prototype approach, under a cost-type contract, is an appropriate and accepted method of procurement. Certainly, a limited production model is another compromise way of doing it. The third way was to state that there was no risk—no high risk—and go right into production.

Mr. BURTON. When and to whom within the FAA did the DCAA report its findings, and what did FAA——

Mr. STOLAROW. The normal procedure would be for the DCAA report to go to the contracting officer and, in effect, they were critical or speculative that the costs would not materialize as projected by Westinghouse.

Mr. BURTON. What did FAA do with these findings?

Mr. STOLAROW. I am not aware of what they did with them. Apparently they disregarded them because they went ahead with the award to Westinghouse.

Mr. BURTON. But they did get the information?

Mr. STOLAROW. Yes, sir.

Mr. BURTON. Do you know what type of information the FAA required Westinghouse to supply to them, and could this information have been used to conduct FAA cost to complete estimates?

Mr. STOLAROW. In essence, the contractor supplied costs expended and budgetary data but no projection of the cost to complete. I do not believe that the FAA personnel could have used the data they received to project the cost overrun that Westinghouse later estimated.

Mr. BURTON. Should they not have required that information?

Mr. STOLAROW. Yes, sir. We believe they should have, certainly. But it was not required under the contract. In a cost-type contract,

as I mentioned in my statement, that certainly is a critical element that should be continuously provided to the agency.

Mr. BURTON. Do you know if FAA attempted to get this information through regular contract review programs conducted by their own personnel?

Mr. STOLAROW. They tried to get it informally but were unsuccessful because the contract did not require Westinghouse to provide that type of information.

Mr. BURTON. They asked Westinghouse, and Westinghouse just said no?

Mr. STOLAROW. Right.

Mr. BURTON. That seems to be a bad way to treat a big customer.

Mr. STOLAROW. I think so.

Mr. BURTON. Should that not have rung a bell somewhere in FAA?

Mr. STOLAROW. Yes, sir. I think so. With the history of the negotiations and the way that the prices were negotiated downward, certainly they should have been suspicious when they could not get a cost to complete estimate.

Mr. BURTON. Your statement that there may be additional costs incurred by the elimination of effective competition—could you elaborate on that? In other words, would Westinghouse end up with a lock on the whole business and then be able to charge whatever——

Mr. STOLAROW. That is our conclusion—that by permitting the buy-in and eliminating competition, Westinghouse has the Government at a disadvantage as far as negotiating the production contracts for follow-on radars.

Mr. BURTON. One of the theories, as I understand it, for the giveaway to General Dynamics was to allow them to stay in a competitive position. I do not think it is the duty of the American taxpayers to have their money thrown away so that some business might stay competitive. That is different from allowing somebody to come in with a loss leader and buy in cheap.

Mr. STOLAROW. That is correct.

Mr. BURTON. Do you agree with my first statement that it is improper policy—say, in the General Dynamics contract or in any case—to, in effect, give away the money like we did with the contract modification just so, quote, they might stay competitive in the business?

Mr. STOLAROW. I would agree with you in the case of a procurement of radars such as this. It has been shown on high volume production-type purchases—for example, the Army did it with rifles—that it does pay to fund a second source contractor, to set up the tooling and the production facilities, and that the competition and the additional source are of benefit to the Government. But on major high technology programs like this, I do not think there is any advantage to doing that.

Mr. BURTON. Lastly, the Department of Transportation disagreed with your findings. How did they disagree? Did they just say, we disagree with you—you are wrong? According to your testimony, they disagreed, and you looked at what they said, and they——

Mr. STOLAROW. They did not present any new facts that would lead us to change our conclusions.

Mr. BURTON. They just disagreed with you.

Mr. STOLAROW. They sent a short letter saying that they disagreed.

Mr. BURTON. Thank you. Mr. Stangeland?

Mr. STANGELAND. Thank you, Mr. Chairman.

Mr. Stolarow, have the funds that have been expended in these various procurements been properly vouchered and accounted for?

Mr. STOLAROW. Mr. Stangeland, we have not checked into that. I could not say, but we have no reason to believe that they have not been.

Mr. STANGELAND. Have you, in various studies in the past, found FAA procurement procedures showing similar poor judgment, and is it a general rule, or are these examples exceptions?

Mr. STOLAROW. We have had other reports about FAA procurement practices, and we were critical of the things they were doing. Yes, sir.

Mr. STANGELAND. Have you recommendations that can change those practices?

Mr. STOLAROW. We have made a number of recommendations to the FAA. We have recommended that they, along with other agencies, use different systems to monitor contract performance and contract costs, that they report to the appropriate committees of the Congress when there are cost overruns or problems. Yes, sir, we have made some recommendations.

Mr. STANGELAND. Do they accept those recommendations? Are they following them, to your knowledge?

Mr. STOLAROW. I would like Mr. Pines to answer that. He is more familiar with that.

Mr. PINES. In December of last year, we reported on major civil projects. The recommendation was made to the Office of Management and Budget. To date, the recommendation has not been adopted. We are talking to people over there, and hopefully changes will be made in reporting systems of the civil agencies.

The Department of Defense has a fairly complex method of reporting on their major weapons systems, and we are hoping, certainly for the high priced civil systems, that civil agencies adopt some of the same techniques.

Mr. STANGELAND. I have no other questions, Mr. Chairman.

Mr. BURTON. Mr. English?

Mr. ENGLISH. Thank you, Mr. Chairman.

As I understand it, this decision was made back in 1972. Is that correct?

Mr. STOLAROW. Yes, sir, initially.

Mr. ENGLISH. Who was the procurement officer during that period?

Mr. PINES. We will supply it for the record. We do not have it with us.

Mr. STOLAROW. I do not have it right at hand. Do you mean the contracting officer or the senior FAA official in charge of the program?

Mr. ENGLISH. I would like both, or if you have either of them now, I would like to know now.

Mr. STOLAROW. We will supply those names for the record.

[The information follows:]

The official responsible for the contracting activity from February 1970 to December 1973 was Mr. Paul Comulada. From January 1974 to the present time Mr. Richard F. Frakes, Director, Logistics Service has been responsible.

The contracting officer who signed the ARSR-3 prototype contract was James E. Chestnut in January 1973. There were 13 modifications signed for by the following:

*Modifications and signed by:*

Nos. 1, 3 to 7, and 9—J. E. Chestnut.
No. 2—J. J. Honeck.
Nos. 8, 10, and 11—R. A. Milograno.
No. 12—G. T. Connors.
No. 13—R. W. Caudill.

The contracting officer who signed the ARSR-3 production contract was Roy W. Caudill in June 1975. There have been 35 modifications through September 30, 1977. All of the modifications have been signed by Mr. Caudill except as follows:

*Modifications and signed by:*

No. 3—A. Kann.
No. 19—not issued.
No. 29—R. A. Milograno.
No. 34—J. F. Igoe.

Mr. PINES. The Administrator of the FAA during the period March 1969 to March 1973 was John H. Shafer. He is listed in the report we issued on August 25, 1976.

Mr. ENGLISH. Is he still with the FAA?

Mr. PINES. He has been succeeded by several Administrators. Of course, Mr. Bond is the current Administrator.

Mr. ENGLISH. Do you know where Mr. Shafer might be at the present time and where he is employed?

Mr. BURTON. Supervising Westinghouse operations. [Laughter.]

Mr. ENGLISH. That is what I want to find out.

It is also my understanding that the prototype has never been produced, from your testimony. Is that correct?

Mr. STOLAROW. That is correct.

Mr. ENGLISH. Have there been similar types of situations such as this where a large amount of money—I am, in particular, thinking about this 1971, 1972, 1973 period—$1 and $10 million was laid out by the FAA for such a prototype in which no prototype was produced and in which the Government received no benefit?

Mr. STOLAROW. I am not aware of any.

Mr. ENGLISH. With regard to the $4 million-plus that was put forward by the FAA, from what you could find, has there been any benefit whatsoever received from that from a technological standpoint?

Mr. STOLAROW. It is hard to say just what technological benefits have been received. There were some tests conducted of components and subsystems. There were some drawings completed, but far less than the original scope and intent of the contract.

Mr. ENGLISH. Again, taking you back to the 1971 through 1973 period, is it not a fact that we got into a similar type of situation with Sylvania with regard to development and what was supposedly going to be the ultimate purchase of radar simulators for the training academy——

Mr. STOLAROW. I am not familiar with that situation at all.

Mr. ENGLISH. You have not looked into that at all? Has anyone from GAO looked at that?

Mr. STOLAROW. I am not aware of it.

Mr. ENGLISH. Might I say that I would urge you to do so. I think you may find a similar pattern with regard to procurement. This is the reason I was particularly interested in the officials who made that decision during that period. I would also like to know, if you could submit this for the record, if you could find out, whether the same individuals who were involved in the first decision to give Sylvania the financing to develop the radar simulator were the same ones who were involved in this particular case.

[The information follows:]

The Sylvania contract was signed for FAA in 1972 by George O'Liddy. There were 5 modifications to this contract signed by Bill Burgress.

Mr. ENGLISH. Is there anything, with regard to the hundreds of Government agencies and I suppose thousands of contracts issued each year by the Government, that strikes you as extremely odd about the way the FAA handled its procurement during this period?

Mr. STOLAROW. Well, I think that this particular case that we are discussing here certainly shows a lack of concern for good procurement practices—concepts that have been built up over the years in Government procurements of high technology systems. Certainly, it is hard to understand why they did the things that they did. I think that any student of the procurement process, and particularly of complicated systems, would say that it should not have been done this way. So it is strange.

I presume that FAA procurement people have the same training and background as in other Government agencies.

Mr. ENGLISH. Would you go so far as to say this is highly unusual?

Mr. STOLAROW. I think so; yes.

Mr. BURTON. You would hope so, would you not?

Mr. STOLAROW. I would hope so. That is a better answer.

Mr. ENGLISH. There has been a history, within the FAA, of a revolving door type of approach. People have come from the industry—particularly the electronics industry—into FAA and then from FAA into the electronics industry. This seems to revolve around a few major companies. Is GAO aware of this history?

Mr. STOLAROW. We are generally aware of that problem in agencies throughout the Government and have, on occasion issued a number of reports on controls over conflict of interest and this type of situation. It is not, I do not think, limited to the FAA. All of the regulatory agencies, all of the big agencies that spend substantial procurement dollars, have the same situation where people come from industry and the companies that do business with the Government and are in and out of appointed positions fairly frequently. It is a serious problem that faces the Government.

Mr. ENGLISH. Are you aware of a situation existing in FAA, within the electronics industry, I should say, that FAA has the reputation of purchasing only from the major companies to the exclusion of the smaller companies?

Mr. STOLAROW. I am not personally aware of that situation. As I said, we have not done that kind of work in FAA that would let me answer that question from my own personal knowledge.

Mr. ENGLISH. Given the situation that you have found with regard to this particular case, did you find that kind of situation existing?

Mr. STOLAROW. Certainly the companies they dealt with were all big producers. I am not aware of how many small companies, for example, would be capable—technically capable and financially responsible—to get involved in a program like this, and certainly that is a question that has to be answered. In this case, only four of the bigger producers were involved.

Mr. ENGLISH. Given the revolving door type of situation, given the fact that, at least, FAA has this reputation within the electronics industry, given what you have found here in this particular case, would you agree that at least a great deal more study should be done of the procurement practices of FAA during this period of time?

Mr. STOLAROW. Yes, sir.

Mr. ENGLISH. Thank you very much, Mr. Chairman.

Mr. BURTON. The next witnesses will be Administrator Bond, accompanied by Mr. Weithoner, Associate Administrator for Administration of FAA, Mr. Cochran, Mr. Sharp, and Mr. Frakes.

What I think we will do, Mr. Bond, is have your statement, probably break for lunch, and then come back for the questions.

Would each of you raise your right hands.

Do you, and each of you, solemnly swear that the testimony you are about to give before this subcommittee will be the truth, the whole truth, and nothing but the truth, so help you?

[Chorus of "I do's" from six witnesses.]

**STATEMENT OF LANGHORNE M. BOND, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION; ACCOMPANIED BY CHARLES E. WEITHONER, ASSOCIATE ADMINISTRATOR FOR ADMINISTRATION; JEFFERSON W. COCHRAN, ASSOCIATE ADMINISTRATOR FOR ENGINEERING AND DEVELOPMENT; RICHARD F. FRAKES, DIRECTOR, LOGISTICS SERVICE; WARREN C. SHARP, DIRECTOR, AIRWAYS FACILITIES SERVICE; AND RICHARD A. SMITH, ASSISTANT CHIEF COUNSEL, PROCUREMENT**

Mr. BOND. I welcome the opportunity to appear before the subcommittee to describe our system acquisition process and recent changes made to that process to insure it will more effectively satisfy the mission needs and program objectives of the FAA.

I am accompanied here by, on my left, Mr. Charles E. Weithoner—Gene Weithoner—who is our Associate Administrator for Administration; on my right, Mr. Jeff Cochran who is our Associate Administrator for Engineering Development; and Dick Frakes—Richard Frakes—Director of our Logistics Service.

Also, sitting directly behind me, to my right, is Mr. Warren Sharp who is head of the Airways Facilities Service—the part of the FAA which installs and maintains hardware.

You have convened today's hearing for the purpose of examining apparent problems in the FAA's procurement management. Mr. Chairman, the FAA shares your concern that the procurement process and the broader process of systems acquisition need continuing examination.

In recent years, this process has been subjected to review and evaluation by four separate outside organizations, in addition to our own in-house review. I am pleased to say that we are now well along in a comprehensive overhaul of our acquisition management process.

The five studies that I alluded to were: One, the national aviation system acquisition process study—NASAPS—conducted by an in-house FAA study team in April 1974; two, a report by the consulting firm of Peat, Marwick, Mitchell & Co. in September 1974; three, a report by the consulting firm of Don Sowle Associates, Inc., in September 1975; four, a report by the House Committee on Government Operations relating to the electronic voice switching—EVS—contract of October 1975; and five, the Department of the Air Force report of the FAA Acquisition Process Review of August 1976.

Each of these studies had a different emphasis. The NASAPS study identified a number of deficiencies in the acquisition process, including the need for more effective determination of requirements, preparation of specifications, management of the procurement process, and monitoring and controlling programs. The study assumed the continuation of the present organizational structure but made a large number of specific recommendations for changes in acquisition procedures.

The PMM study recommended major organizational changes and a revised formalized system of planning for and managing acquisition.

The Sowle report's recommendations dealt primarily with procurement and material management functions of the Logistics Service rather than the total acquisition process.

The committee's study focused on the substantive output of the acquisition process based upon an in-depth study of a single procurement and recommendations were made concerning the management of the acquisition process.

The most recent assessment was conducted by personnel from the Department of the Air Force. The Air Force report is, in many ways, a culmination and summary of the reports of previous groups. For this reason, my remarks will be directed chiefly to that report and its specific recommendations.

Before discussing specific details from this report, I think it would be beneficial to describe what we mean by the "systems acquisition process." The process involves more than simply contracting. By the term "systems acquisition process," we mean to include the identification of a potential requirement, the analysis and validation of that requirement, contracting for the development and field implementation of specific hardware and software systems, and monitoring progress toward meeting the requirements.

Potential requirements are identified by the FAA in several ways. They may originate internally, based upon system performance or forecasts of system growth, or they may be identified from outside the FAA, through direct consultation with the aviation community, other governmental agencies, congressional committees, and the general public. Once a potential requirement is identified, it must be validated by the FAA.

Logically, this determination must include an evaluation of mission need and operational requirements, a cost/benefit assessment, and an analysis of basic system alternatives for fulfilling the requirement. Only after this type of examination has been completed is the agency prepared to commit to any "acquisition program" in support of the requirement.

The Air Force study recommended numerous changes in the area of requirements identification and validation and acquisition management. These recommendations were based in part upon the results of the studies I discussed earlier. By and large, the FAA is in agreement with most of the recommendations of the Air Force report and has taken major steps to comply in these areas.

This report made two major recommendations with respect to requirements determinations: one, that the FAA should reinstitute a planning, programing and budgeting system—PPBS—and integrate it with the overall acquisition management process; and, two, that the FAA should reorient long-range and near-term planning directed toward identifying and refining the functional capabilities needed for the National Airspace System.

Implementation of improvements in these areas occurred in March of this year through the publication of FAA order 1810.1, "System Acquisition Management," and FAA order 1800.13a, "Planning and Resource Allocation."

The first order established a "System Requirements Group" which reports directly to the Administrator. The group is charged with the responsibility or the review and evaluation of potential requirements for designated major acquisitions and for monitoring the acquisition process from "concept formulation" through transition to, and implementation as, an operational system. The System Requirements Group—SRG—membership is designed to be reflective of the views of the major operational offices within the agency.

By order 1810.1, the SRG also operates under a firm rule that commitment to major system hardware decisions will occur only after the SRG evaluates mission needs, assesses potential benefits, and considers alternative approaches. The SRG's recommendations are then provided to the top level management in a formal document called the system requirements statement.

The Air Force group also made two major recommendations for improving the program decision process. These were: one, utilize mission needs as the primary basis for selection of programs; and, two, redefine and update the policies which pertain to program decisions.

Our new FAA order 1810.1 clearly states that all major system requirements will be evaluated in accordance with mission needs. The results of this analysis are formalized in the systems requirement statement. As noted earlier, the FAA order is new and represents a concerted effort to update our policy guidance.

The Air Force group also provided us with major recommendations concerning the management of approved programs and the need for centralized control of major systems acquisition.

The principal recommendations in this area were: one, develop a program management directive which sets forth the relationship between a program manager and the FAA requiring offices, and provide for executive level supervision of certain types of program

manager decisions; two, establish a program management organization on either a "centralized" or a "matrix" basis; and, three, institute periodic program status reviews of major programs.

By and large, the FAA is in agreement with and has acted to implement these recommendations. The system acquisition management directive clearly defines the FAA offices responsible for program management in each major stage of system acquisition. In analyzing the Air Force report, the FAA concluded that the matrix-based system is best suited to FAA programs.

Finally, in order to insure timely executive review, the FAA has instituted a periodic status briefing on major programs for the Administrator. Major programs are also reviewed by the Transportation System Acquisition Review Council—TSARC—in accordance with Department of Transportation directives.

To summarize under our system acquisition management directive, the development of new systems begins with the identification of a potential requirement.

This requirement is stated in terms of functional mission needs and is submitted to the FAA system requirements group for review and analysis.

If the requirement survives this screening, a system requirements statement is drafted and submitted to the Administrator for approval. Approval of the statement freezes the agency's general requirements so that a detailed engineering and development program plan can be drafted, and acquisition programs can be initiated in accordance with DOT procedures. An acquisition paper for a major system development effort is based on an approved system requirements statement.

Once the paper has been approved by the Office of the Secretary of Transportation—OST—an "R. & D." type procurement can be initiated.

At this stage, and subsequently, the program will be monitored by the system requirements group; by OST through the TSARC process, if applicable; and by the Office of the Administrator, through my periodic review. Subsequent decisions to pass from the development through the implementation stages are also monitored by these groups.

In addition to the Air Force group's major recommendations which emphasized front-end planning to meet mission needs, the group also made numerous suggestions and recommendations in the more technical area of procurement and contract administration. These recommendations, and our responses to them, are too extensive for me to discuss in this statement. I will be pleased, however, at your request, to provide them for the record.

Mr. BURTON. Thank you. Without objection, the material will be inserted in the record.

[The material follows:]

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

1. Redefine and direct the use of an FAA planning, programming, and budgeting system (PPBS) and assign acquisition policy responsibilities (rulemaking power) to a focal point highly visible to the Administrator. Establish an internal audit function under this executive to insure effective implementation of redefined acquisition management directives and to monitor program outcomes. Reorient long-range and near term planning toward identifying needed capabilities and feasible alternatives to satisfy those needs. Provide cost/benefit analyses (both quantitative and subjective) to enable objective and rational program selections from among competing alternatives.

ACTIONS TO DATE:

The FAA has recently completed a substantial revision of its and acquisition process. On March 21, 1977, FAA Order 1810.1, "System Acquisition Management," and FAA Order 1800.13A, "FAA Planning and Resource Allocation," were approved by the Administrator. These two major policy directives of of the agency were the culmination of efforts initiated in 1975. Under the leadership of the Deputy Associate Administrator for Administration, a high level ad hoc group of personnel representing the various elements of the agency devoted considerable effort to the systematic development and coordination of an improved acquisition management process. In December 1976, the Administrator reviewed and approved the conceptual framework for an improved framework for an improved acquisition process which considered the results of previous studies, including the Air Force study. He directed that a task force be established to develop an implementing agency policy directive. The task force was also directed to review and modify as necessary the revised agency planning and resource allocation policy directive that was currently in coordination. The result of the task force was the two directives previously referenced.

FAA Order 1800.13A establishes the agency Planning and Resource Allocation (PRA) process and related policies. The PRA process covers the broad spectrum of all agency resources, appropriations and activities from long-range plans through multi-year programming, current year budget submissions, budget execution and evaluation of completed programs. It addresses the analysis, evaluation, justification, controls and procedures necessary to develop and execute programs in support of FAA/DOT missions and objectives. The PRA process has been tied to the System Acquisition Management (SAM) process through the mandate that certain activities in the SAM process be accomplished before major system acquisition programs can move forward through the PRA process.

2

FAA Order 1810.1 establishes the SAM process and related acquisition management policies of the agency. The focal point for managing and monitoring the flow of the SAM process is the System Requirements Group (SRG). The SRG is a high level group of representatives of each Associate Administrator and the Director of Flight Standards chaired by the Deputy Associate Administrator for Administration. This multidisciplinary group reporting to the Administrator is responsible for the orderly flow of the SAM process through all phases and expediting the focus of top management attention upon the critical issues related to major system acquisitions.

The SRG is also responsible to initiate and operate a Requirements Tracking System (RTS). The RTS will incorporate approved agency system requirements as a baseline and track agency efforts to fulfill the requirement through all phases of the SAM process. Significant deviations from the baseline will result in SRG efforts to expedite the focus of appropriate management attention upon any problems that may exist.

The Associate Administrator for Administration is charged with the responsibility to perform periodic appraisals of the SAM process. The appraisals are intended to assess the adequacy of the SAM procedures and the overall performance of the process. The results of these appraisals are reported to the Administrator.

Both the SAM process and the PRA process place emphasis upon through long-range planning, identificatoin of needs and alternatives to satisfy those needs early in the process, and comprehensive analytical efforts including cost/benefit assessments to enable informed, objective decision-making.

The SAM process is being implemented on a phased basis with full implementation scheduled for March 1978. The initial implementation phase included the introduction of five agency programs beginning in May 1977. These programs are: Flight Service Station Modernization; Microwave Landing Systems; Discrete Address Beacon System; Second Generation VOR/VORTAC; and Airport Surveillance Radar Replacement.

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

2. Select programs and develop budgets to support mission needs. Issue and enforce a directive that prescribes the program go-ahead decision process and specifies indepth the tasks, duties, authorities and responsibilities that constitute the entire acquisition life cycle.

ACTION TO DATE:

Both the PRA and the SAM policy directives emphasize the mandate that agency programs and budgets be based upon missions and objectives of the FAA/DOT. Chapters 1 and 2 of Order 1800.13A address the need for thorough objective analysis of program proposals, correlation with missions, objectives, policies, plans, etc., and sources of analytical expertise within the agency. Other chapters of the order address the orderly flow of the PRA process through its various phases with continuing emphasis upon objective analysis, correlation with missions and objectives, and critical assessment of proposed approaches to assure their validity.

Chapter 4 of Order 1810.1 sets forth in greater detail the same types of mandates for the SAM process. It specifies that, prior to validation of a potential major system requirement, a thorough evaluation of mission need, assessment of potential benefits and evaluation of options (including nontechnical and noncapital options) must be completed. This effort must be documented in a System Requirements Statement (SRS) approved by the Administrator and tracked through resolution by the SRG. This documentation in an SRS must be accomplished prior to entry into the PRA process of a current year budget request for major R&D or procurement funds (thus providing discipline in the process).

Similarly, Chapter 6 of Order 1810.1 emphasizes the continued assessment of the validity of the program alternatives, implementation strategy, and other critical factors prior to the commitment to implementation in the Acquisition Authorization (also approved by the Administrator). Factored into this process also is the review process of the Office of the Secretary of Transportation through the Transportation Systems Acquisition Review Council, other DOT directives and mandates and the policies set forth in OMB Circular A-109, Major System Acquisitions.

The SAM process clearly sets forth the acquisition management cycle with appropriate review points, duties, responsibilities, accountability and phases in Chapter 2 and Appendices 1 and 2 as well as the more detailed text in Chapters 3-7.

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

3. Establish a single executive focal point for governing the program management function. Accomplish this function through either a centralized, self-supporting program management organization or a matrix approach to bring existing functional groups under the authority of the various program directors. Develop professional program managers through education and career progression, and support them with specialist capability (e.g., technical, financial, etc.). To monitor and support contractor operations, provide formally organized field teams, remove acceptance authority from the requirements organizations and consider the use of DOD contract administration organizations.

ACTIONS TO DATE:

The approach of establishing centralized program management organizations was extensively evaluated during both the development of the SAM concept and the implementing policy directive to institutionalize the SAM process. Based upon the following considerations, the Administrator concluded in February 1977 that this was not a practical alternative. Acquisition of systems is a correlary, although highly important, support activity for accomplishment of major mission objectives. Further, the agency does not have adequate resources available to establish a separate, dedicated organization for system acquisitions independent of other activities. This type of organization is generally practical only for acquisition activities such as DOD where acquisitions are in terms of billions of dollars.

Second, the complex interaction of hardware/software systems with the procedural, regulatory, operational, labor relations, environmental and user/public coordination aspects of FAA activities mandates that acquisition management be conducted as an integrated portion of the execution of overall responsibilities. The establishment of a multidisciplinary SRG, operating in close coordination with the functional organizations, offered substantial advantages over centralized program management organizations.

Thus, the agency selected the option in the study of a form of matrix management organization. The SAM process established the System Requirements Group, a high level group reporting to the Administrator. This combines the advantages of a high level focal point for acquisition management with the advantages of retaining the functional alignment of the organization and drawing upon many disciplines. The SAM process mandates a written charter specifying accountability, authority and responsibility of program manager (in accordance with OMB A-109). The tasking of organizations is in accordance with functional responsibilities as defined in agency directives (Order 1100.2, FAA Organization) and the manager charter required by the SAM process. In addition, the SAM process mandates a Requirements Tracking System operated by SRG to

to provide necessary management information and visibility for major program activities. However, the specific assignment of specialists is not consistent with integration of acquisition activities and other agency functions, resources available to conduct agency business or the magnitude of agency acquisition activities compared to all other functional responsibilities.

In the area of training and developing professional program managers, the agency has been improving the level of awareness and expertise of program managers. Material on the operation and need for the SAM process has been incorporated into our Lawton Management Training School course work. This training school includes a special course devoted specifically to program management within the agency. Further, we are planning to establish a seminar for professional, technical program managers to relate the SAM procedures and theory with FAA programs.

The quality assurance policymaking and technical guidance authority of the Logistics Service has been extended by FAA Order 4630.8, entitled "Quality Assurance Policy," dated October 27, 1977. It indicates that it is FAA policy "that a Quality Assurance Program shall be provided for and included in the documentation for the acquisition of NAS systems, equipment and material." The order further assigns to the Logistics Service the responsibility to "formulate and implement agency policy, standards and procedures for the quality assurance programs involved in the acquisition of NAS systems, equipment, and material."

To assure competent performance of quality assurance activities in the field, as well as headquarters, the Industrial Division of Logistics Service is providing three kinds of assistance.

First, procedural consultation for procurements initiated by the regions and centers.

Second, technical assistance in the form of Quality and Reliability Officers (QRO's) to aid Resident Engineers (RE's) and Technical Officers (TO's) in evaluating the adequacy of contractors' out-of-plant operations, including installation sites. Such assistance has been provided for several programs; i.e., PCS for RML, ARSR-3, ILS.

Third, transmittal from the Logistics Service to the acceptance organization, of contractors' contractual quality assurance commitments for installation site operations as described in the Quality Control System Plan (QCSP). These are obtained in response to FAA-STD-016, entitled "Quality Control System Requirements," and they provide the FAA organization responsible for inspection and acceptance with a basis for evaluating the adequacy of contractors' quality assurance operations.

3

Formally organized field teams have been provided. An example of such field team description is provided in FAA Order 6012.3, entitled "Implementation of Power Conditioning Systems in RML's." The designation of ACO's has been reevaluated to assure the appropriate and effective use of ACO's.

Thus,the Logistics Service has taken steps to provide field representatives whenever contractor performance must be evaluated and concurrently to assist in establishing Quality Assurance groups within the regions to operate under the technical policy guidance and standards of the headquarters' Logistics Service.

Precautions are being taken to assure separation of acceptance authority for contractor goods and services from the requirements organizations. Specifically, in-plant acceptance is assigned to Quality and Reliability Officers (QRO's) who represent the Logistics Service. Acceptance at installation sites is normally assigned to Resident Engineers (RE's) who are specifically delegated by the Contracting Officer in the Logistics Service. There have been some past contracts in which the Technical Officer (TO) has been assigned the authority to formally accept the first system only, in order to assure adequate evaluation of all technical considerations.

Arrangements have been made with the Defense Logistics Agency (DLA) to utilize its in-plant services on 24 contracts to date. In addition, it is current practice to review each contract, prior to assignment of Government responsibility for inspection and acceptance, to determine the feasibility and effectiveness of using DLA services. As indicated above, resident FAA resources are directed towards those operations for which DLA is not a reasonable alternative.

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

4. Issue and enforce a directive governing the delegation of authority to reprogram funds which provides consistent central visibility and uniform policies. The FAA should comprehensively reexamine its financial management policies and practices, including the full-funding concept.

ACTIONS TO DATE:

In addition to the previously described features of the SAM process and the PRA process, which includes general financial management policies, FAA Order 2500.3C dated August 26, 1976, "Delegation of Authority to Adjust Budget Estimates, Fiscal Programs and Projects in F&E Appropriations," also applies to this recommendation. Order 2500.3C established revised policies and guidelines related to delegations of authority to reprogram funds. This order provides a portion of the consistent central visibility and uniform policies related to delegations of authority recommended by the Air Force report.

The reprogramming of R&D programs is currently accomplished primarily by the Associate Administrator for Engineering and Development with policy guidance and broad decisions by the Agency Review Board. Specific reprogramming criteria are currently being drafted for issuance.

The theory of full-funding, which tends to result in large carryovers of funds from one fiscal year to another has major advantages for program accomplishment. With year-to-year appropriations, major problems result in partial funding with the risk of not being able to complete the program in future years. The full-funding concept, however, is under study and continually being reviewed to assess its suitability as basic fiscal policy by FAA.

The SAM Process focuses management attention on fiscal considerations early in the acquisition cycle as recommended. It also provides a means of continuous monitoring throughout the life of the program to better ensure fiscal integrity and ultimate benefits consistent with the costs.

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

5. Request that OST expedite its review of the DOT Procurement Regulations (DOTPR) currently in progress. The Administration should consolidate its own orders and incorporate them into the FAA Procurement Regulations (FAPR) concurrently with an immediate update of the other FAPR provisions.

Action to date:

The review of DOT Procurement Regulations (DOTPR) has been completed. A full DOTPR update was printed in the Federal Register on September 8, 1977. It is now in printing and is expected to be distributed by the end of December 1977.

The major thrust of the DOTPR update was to bring the DOTPR in line with current FPR, and new coverage on Value Engineering, handling of classified data, as well as new coverage on Government Furnished Property and Small Purchases.

In January 1978, the DOTPR Policy and Regulations Committee will meet again. An agenda is being prepared to suggest topics for its consideration. The committee will compare DOTPR subjects to the FPR to see if they are still adequate, are no longer needed, or if a different type of coverage is required.

All agency directly related procurement orders are already included in Part 99 of the FAPR. These procurement orders which relate to procurement concerns are being integrated into the FAPR.

The agency will not include orders issued by other FAA offices in its integration of orders into the FAPR. The FAPR is the definitive FAA procurement authority and guidance document and should not include orders which are at best peripheral to procurement.

Other FAPR provisions are being updated. FAPR Change 4, which is a major change, was printed and distributed in August 1977. Among other changes, the following were included in Change 4:

Subsection 12A-1.1003-2 was revised to show changes in requirements for submitting synopses to the Commerce Business Daily.

Section 12A-1.1202 was added to provide guidance on the prequalification of potential suppliers.

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Section 12A-2.106 was added to provide for management evaluation of the of the formal advertising procurement operations in the headquarters and regional offices. (This change brought the FAPR in line with the FPR).

FAPR Change 5 dealt with small purchases authority. It was signed on October 14, 1977, and is now being printed for distribution. Thus, continuing efforts are being made to keep the FAPR current with the Federal Procurement Regulations, Statutes, and decisions of Courts and Boards.

KEEGAN REPORT - EXECUTIVE SUMMARY

RECOMMENDATION:

6. With respect to the proper selection of contract type, the FAA should immediately review the area and determine what training and reorientation should be accomplished.

ACTION TO DATE:

A review of contract types has been made, as recommended. Currently there has been an increase in the use of incentive contracts.

Since August 1976, professional procurement personnel have been assigned more frequently to training courses, both at the FAA Academy and in the Washington area. In addition, many have come from other agencies, especially agencies within DOD, who have received extensive contracts training and experience in those agencies. Technical personnel in FAA have been assigned to a procurement orientation course on a regular basis; this has sensitized them to the various contract types and usage thereof.

Forty-two of the 66 person professional procurement staff have attended courses which cover Incentive Contracting and many of these people have attended more than one course on the subject.

The agency intends to continue its efforts in the professional procurement training area.

Improvement of the process for validation and monitoring of system requirements was established by Order 1810.1. Improved integration of planning and budgeting procedures with acquisition management was established by Order 1800.13A. In addition, the Airway Facilities Service has established improved standard internal procedures in two recent policy directives, AF Order 6011.4, "F&E Cost Estimating Procedures and Summaries Handbook" (September 1976), and AF Order 6011.2, "Airway Facilities Service F&E Future Program Development Procedures" (July 1977).

KEEGAN REPORT - EXECUTIVE SUMMARY

7. To insure procurement work force continuity and a continuing high level of personnel qualification, FAA management should immediately begin recruiting qualified procurement trainees.

Action to date:

The agency has been in a restrained recruitment posture for some time and, thus, has not been able to set aside positions for a formal recruitment/trainee program. There is now a DOT Management Intern Program in existence from which possibly FAA can draw qualified people. Also, there is an abundance of former procurement interns from other agencies in the D.C. area to draw on.
FAA has placed strong emphasis on training of its procurement work force. Contracting and procurement personnel are regularly scheduled to attend "within agency" and "outside agency" training courses to continue development of proficiency in the procurement field. Since August 1976, FAA headquarters procurement people have collectively attended some 64 courses covering a wide variety of subject areas dealing with the contracts and procurement field. Personnel that the FAA has hired from other agencies in the D.C. area, especially from DOD, are highly trained and many are graduates of other agencies' procurement intern programs. In addition, the FAA does provide for informal on-the-job training which has successfully moved secretarial/clerical people into contracts/procurement positions.

Keegan Report: Recommendations regarding Requirements Determination

- Planning procedures, budget development and requirements determination are not adequately integrated.

- Recommendation:

[p. 20, 84] IA.1(a) The PPB system should be redefined and integrated into an overall acquisition management process. The planning function should be placed in its proper perspective of actively leading the acquisition process.

Action to Date:

- Order 1800.13A, Planning and Resource Allocation, revised and reissued March 21, 1977. This policy order strengthens the tie between resource management and acquisition management. Requires specific acquisition management actions and documentation (System Requirements Statement, Transition Plan and/or Acquisition Authorization) prior to finalization of certain resource management and budget actions.
- Order 1810.1, System Acquisition Management, issued March 21, 1977. Companion policy directive which is cross-referenced in Order 1800.13A. Mandates specific actions and documentation before acquisition programs can move forward to next phase of acquisition cycle. (p. 14)
- Requirement must be clearly identified, defined, validated and documented in a System Requirement Statement approved by the Administrator before a major system acquisition program can move to full-scale development. (p. 3)

[ ] Keegan report page ref.
( ) 1810.1 page ref.

- Acquisition Authorization must be approved by Administrator before full-scale implementation. Revalidates requirement, documents selection of alternative and establishes parameters (boundaries) for implementation. (p. 3, 21)

- First System Requirement Statement/Acquisition Authorization (Second Generation VORTAC) approved September 6, 1977.

- SAM process scheduled for full implementation by March 1978.

- Recommendation:

[p. 20, 84] IA.1(b) Provide realistic checks and balances in the acquisition system by assigning rulemaking (sic) authority, including planning rules, to a single acquisition policy organization. This organization should be headed by a senior executive and should be independent of acquisition management operations such as program initiation, budgeting, technical direction and so forth.

The FAA should also establish an internal audit capability within the acquisition policy organization to measure compliance with acquisition directives and evaluate program outcomes to detect the need for future system changes.

Actions to Date:

- System Requirements Group established. Consists of high-level representatives of Associate Administrators and Director of Flight Standards Service, chaired by Deputy Associate Administrator.

Responsible to the Administrator for managing and monitoring the SAM process from identification of potential requirements through implementation and commissioning of major systems to satisfy validated requirements. (p. 3, 17)

- Responsibility for overall process evaluation and appraisal assigned to the Associate Administrator for Administration. Includes assessment of the effectiveness of SAM procedures, the System Requirements Group operations, need for changes/improvements in overall SAM process, etc. (p. 8)

- Design and initial implementation of Requirements Tracking System operated by SRG. Will track programs in terms of validated requirements, assess program accomplishment in terms of satisfying established requirements and assure continued validity of requirements. (p. 22)

. Recommendation:

[p. 21, 85] 1A.1(c) The revised planning procedures and other acquisition guidance should recognize realistic thresholds in program size and complexity in requiring specific documentation of supporting analyses and program decisions.

Actions to Date:

- In developing Order 1810.1 the task force gave specific consideratic to the fact that documentation requirements must be consistent with the magnitude of the procurement. (p. i)

The task force was aware of the fact that one of the items that led to the demise of FAA Order 1800.1 (previous procedures) was its insistence upon a voluminous level of documentation for even relatively small procurements. In this respect:

(a) Order 1810.1 applies strictly to major acquisitions only and is intended to serve as a guideline, establishing a logical framework for nonmajor acquisitions. (p. i)

(b) Dollar thresholds in defining major acquisitions were specifically avoided. Major acquisitions are selected on a case-by-case basis after a review of impact upon the agency, public and the users; risk factors, dollar estimates, complexity, visibility and other critical issues. This allows a more flexible application than would fixed dollar thresholds. (p. 2)

Recommendation:

[p. 21, 85] IA.1(d) Planning procedures should provide for follow-up on program results to confirm assumptions and cost estimates employed by the planning organization.

Actions to Date:

- Following approval of the SRS and during subsequent system development and implementation, the System Requirements Group (SRG) monitors, and is provided feedback, upon costs and benefits to assure that the solution is meeting parameters. (p. 22)
- Dollar values measured during this feedback activity are used to flag acquisitions which may be tending towards becoming cost ineffective. They can also be used to improve cost estimates on future implementations.

Recommendation:

[p. 21, 85] IA.2 Long range and near term planning should be reoriented. In particular:

a. NAS functional capabilities should be identified and refined rather than have the FAA prematurely commit itself to specific hardware programs.

Actions to Date:

- Per Order 1810.1 major acquisitions cannot be undertaken until a System Requirements Statement (SRS) is approved by the Administrator. (p. 3, 17)
- The SRS must specifically state the mission need in functional terms. (p. 21)

Recommendation:

1A.2(b) Planning should define the value of needed capabilities in a form suitable for guiding subsequent cost/benefit analyses of competing feasible solutions. These criteria must aid the establishment of priorities within the existing broad categories of safety, capacity, production, and so forth.

Actions to Date:

- Order 1810.1 indicates that requirements relate to factors such as safety, capacity, and productivity. (p. 21)
- Potential requirements can be input to the System Requirements Group (SRG) by any FAA office/service/region or may come from outside the Agency. (p. 13)

- For requirements deemed major, a study is undertaken to delineate and attempt to quantify in dollar terms potential benefits. (p. 20)
- All major requirements appearing to be cost beneficial are summarized in an SRS. (p. 21)
- The SRS then forms a "pool of requirements" upon which the agency can act to allocate resources. (p. 8)

Recommendation:

[p. 21, 85] IA.2(c) Planning must identify the feasible alternatives for satisfying functional capability needs.

Action to Date:

- The SRS and the supporting study are specifically required to address all feasible alternatives (including noncapital and nontechnical). (p.2(

Recommendation:

[p. 21, 86] IA.2(d) Provide FAA management, at appropriate times, with realistic and competent cost/benefit analyses of those programs being considered for the commitment of resources, thoroughly documented for major programs and recorded in some useful way for lesser efforts.

Actions to Date:

- The SRS assures no major activity is undertaken before the required C/B studies are performed. (p. 20)
- Major resources cannot be committed before the SRS is approved by the Administrator. (p. 8, 17)

- The SRG continually tracks the SRS to assure continued validity of the requirement and that the solution is within the required bounds. (p. 22)
- For nonmajor efforts, the agency has been encouraged to use Order 1810.1 and the SAM process as a guide. The Airway Facilities Service is in the process of using this guidance to establish an internal order for some of its nonmajor acquisitions. (p. 1)

Keegan Report: Recommendations regarding Program Decision Process

- Mission needs not used as primary basis for selection of programs and development of budgets.

- Recommendation:

[p. 24, 86] IIA.1 Ensure that acquisition programs and budgets are developed to support mission needs. Even though annual budget proposals should reflect politically realistic funding levels, the FAA's credibility with the Congress and their resulting support of the FAA's resource requests would be substantially enhanced by a rigorous application of Planning -- Programming -- Budgeting principles.

Actions to Date:

- Budgetary procedures and methods being revised in accordance with most recent OMB directives such as A-11, A-109, etc.
- Major acquisition programs must have formal statement of requirements and mission need approved by the Administrator prior to committment of substantial funds (excluding some long range resources) in accordance with SAM process. (p. 8, 17)

- Order 1800.13A, Planning and Resource Allocation (revised March 21, 1977) provides for an improved, systematic process of translating long range plans and policies into current year budgets with a direct correlation to the SAM process.

Recommendation

[p.26, 86] IIB.1 Issue a new directive or completely revise FAA Order 1800.1 to provide sound guidance to FAA managers involved in program decision-making. This document should be the master roadmap; it should be dynamic; and certaintly, it must be enforced.

Action:

- Order 1800.1 was cancelled and replaced by 1810.1 in March 1977.
- 1810.1 addresses the entire life cycle starting at defining mission requirements and ending at assuring the implementation has met those requirements in a cost beneficial way.
- Programs are monitored by the SRG and problems brought to the attention of management. (p. 22)

Keegan Report: Recommendations regarding Management of Approved Programs

- FAA program management characterized by lack of centralized authority and visibility, lack of professional program managers and associated program management staff and no established standard to determine when program is complex enough for formal program management structure.

- Recommendation

[p. 35, 87] IIIA.1 Establish a single executive focal point for developing and maintaining an FAA directive governing the program management function.

Actions to Date:

- 1810.1 requires the program manager be given a written charter delineating schedules, goals, authority, and accountability. (p. 2)
- Because of the diverse nature of FAA activities charters will have to be tailored to each task.
- The Agency (through the seminar now being established) is soliciting program managers inputs on how these charters should be developed and what they should contain.

Recommendation

IIIA.2 The program management directive should prescribe the following:

(a) Thresholds for identifying programs requiring formal project management. This should concentrate on management complexity more than simply the dollar value of the program, but both characteristics should be considered.

Actions to Date:

- Order 1810.1 is specifically written in that way.

- Major systems are defined as those "critical to fulfilling agency missions, which entail the allocation of relatively large resources and those that warrant special management attention." (p. 2)
- Dollar limits are purposely avoided.
- Each program is evaluated on a case-by-case basis.

Recommendation:

[87] IIIA.2(b) Program management directive should prescribe suitably designed planning documentation for FAA R&D and acquisition programs, and identification of when it is required. The FAA should attempt to standardize the types of plans and ensure that they meet acceptable planning criteria before permitting a program to proceed.

Action:

- Order 1810.1 standardizes the documents required for major acquisitions.
- All decision documents undergo SRG review. (Appendix 2)
- Key documents must be approved by the Administrator. (Appendix 2)
- Major budgetary actions are not allowed until the key documents have been approved. (p. 8, 17)

Recommendation:

IIIA.2(c) Program management directive should prescribe the organization and authority relationships to be used in managing a program. (p. 35,87)

Action:

- Accountability and responsibility of the program manager and the SRG are clearly indicated in Order 1810.1. (p. 2, 25, 31, 37)
- The program manager is provided a written charter which defines authority and accountability for the particular program. (p. 2)

Recommendation

IIIA.2(d) Program management directive should prescribe executive level supervision of specific types of program manager decisions, (e.g., requirements changes above a specified threshold), and the nature and content of program management reviews to be conducted by higher authority.

Actions to Date:

- The SRG utilizes a Requirements Tracking System (RTS) incorporating periodic program reviews to assure that it is informed of program developments. (p. 22)
- Any items which impact the approved requirement (as stated in the SRS) must undergo SRG review. (p. 22)
- Before transitioning to implementation the requirement must be revalidated. (p. 32)

Observation (Program Management Organization)

- Report states that agency should provide for a program management organization with adequate and independent authority; and, establish a management information system to provide managers with visibility of activities of all program participants (Government and contractor). The program manager should be able to do something about what he observes. This means he should be able to task all Government participants, regardless of where they are located in the FAA and he should have the authority to make the appropriate management decisions. Two alternative approaches were recommended.

Recommendation (Alternative I):

[p. 36, 88] IIIA.3(a) A centralized acquisition management organization for the FAA, with both program managers and the necessary supporting functional groups collected under a single executive.

Actions to Date:

- This approach (essentially the "Acquisition Executive" concept) was extensively evaluated during both the development of the SAM concept and the implementing policy directive to institutionalize the SAM process. Based upon the following considerations, the Administrator concluded in February 1977 that this was not an acceptable alternative:
  - The acquisition of hardware/software systems by the agency is not a major mission area. Acquisition of systems is a corollary, although highly important, support activity for accomplishment of major mission objectives. Further, the agency does not have adequate resources available to establish a separate, dedicated organization for system acquisitions independent of functional activities of the agency responsive to major missions.
  - The complex interaction of hardware/software systems with the procedural regulatory, operational, labor relations, environmental and user/public coordination aspects of FAA activities mandates that acquisition management be conducted as an integrated portion of the execution of overall functional responsibilities. The establishment of a multi-disciplinary SRG offered substantial advantages over an Acquisition Executive.
  - The portion of total funds available to the FAA which is dedicated to acquisitions is approximately 10 percent of our annual budget

over $300 million F&E, R&D, etc., of a $3 billion budget).

An organizational structure such as the type recommended in this alternative is generally practical only for acquisition activities such as DOD where acquisitions are in terms of billions of dollars.

Recommendation (Alternative II):

[p. 36, 88] IIIA.3(b) Alternatively, a matrix approach with existing organizations now acquiring systems designating separate project management groups dedicated to and trained for this function. They would exercise their authority to task the supporting functional groups through formal agreements.

Actions to Date:

- SAM process established the System Requirements Group, a high level multidisciplinary group reporting to the Administrator (who could be considered as a quasi-acquisition executive). Combines the advantages of a high level focal point for acquisition management with the advantages of retaining the functional alignment of the organization and drawing upon many disciplines.
- SAM process mandates a written charter specifying accountibility, authority and responsibility of program manager (in accordance with OMB A-109).
- Tasking of organization is in accordance with functional responsibilities as defined in agency directives (Order 1100.2, FAA Organization).
- SAM process mandates a Requirements Tracking System operated by SRG to provide necessary management information and visibility for major program activities.

Recommendation:

[p. 36, 88] IIIA.4 Provide program managers for major systems with certain technical specialists having more specific reporting responsibility to them, even if a matrix approach to contract management is chosen. These specialists should represent both the engineering and business management skills. A financial management capability is especially important. Contract management expertise, especially in the quality assurance area, would also be very useful.

Actions to Date:

- Overall responsibilities specified in FAA organization SAM process directives with more specific details included in program manager charter.
- Specific assignment of specialists is not consistent with integration of acquisition activities and other agency functions, resources available to conduct agency buisiness or the magnitude of agency acquisition activities compared to all other functional responsibilities.

Recommendation:

[p. 36, 88] IIIA.5 Develop professional program managers, with engineering and business background as appropriate and trained for managing programs under the FAA's business environment.

Action:

- Material on the operation and need for the SAM process has been incorporated into our Lawton (MTS) course work. MTS school includes a special course devoted specifically to program management within the agency.



27-075 O - 78 - 10

- The possible use of longer term DOD courses has undergone preliminary study and will be looked at in more depth in the near future.
- We are continuing to make use of available long term courses such as EPM, ICAF, the Air War College and our own ATSS program.
- Our Executive Development Program is structured to broadening the experience of our most qualified managers.
- We are planning to establish a seminar for professional, technical program managers to relate the SAM procedures and theory with FAA problems.

Recommendation:

[p. 37, 88] IIIA.6 Institute perodic program status reviews of major programs for the Administrator and key administration executives during which the program manager briefs all aspects of his assigned program.

Action:

- The SRG receives periodic briefings and upon it falls most of the work burden.
- Unresolvable differences are elevated to the Administrator.
- Top executive time is conserved as much as possible by having them deal only with exceptions and problem areas. Routine reports above the SRG level are minimized where possible.

KEEGAN REPORT: The FAA does not make optimum use of its field representatives in monitoring contractor operations, validating contractor progress reports and verifying conformance to contract requirements.

Recommendations

1. Extend the Q.A. policy making and technical guidance authority
p. 89 of the Logistics Service to cover all Quality Assurance activities within the FAA (i.e., including Regions and Centers). The FAA should ensure that adequate procedures, competently performed, are uniformly used in dealing with contractors, whether in manufacturing plants, or at installation sites.

Actions

1. FAA Order 4630.8, entitled "Quality Assurance Policy" was issued dated, October 27, 1977. It indicates that it is FAA policy "that a Quality Assurance Program shall be provided for and included in the documentation for the acquisition of NAS systems, equipment, and material." The order further assigns to the Logistics Service the responsibility to "formulate and implement agency policy, standards and procedures for the quality assurance programs involved in the acquisition of NAS systems, equipment, and material."

2. To assure "competent performance" of quality assurance activities, the Industrial Dividion of the Logistics Service is providing three kinds of assistance as follows:

   a. Procedural consultation for procurements initiated by the regions and centers.

   b. Technical assistance in the form of Quality and Reliability Officers (QRO's) to aid Resident Engineers (RE's) and Technical Officers (TO's) in evaluating the adequacy of contractors' out-of-plant operations, including installation sites. Such assistance has been provided for several programs i.e. PCS for RML, ARSR-3, ILS.

   c. Transmittal from the Logistics Service to the acceptance organization, of contractors' contractual quality assurance commitments for installation site operations as described in the Quality Control System Plan (QCSP). These are obtained in response to FAA-STD-016, entitled "Quality Control System Requirements," and they provide the FAA organization responsible for inspection and acceptance with a basis for evaluating the adequacy of contractors' quality assurance operations.

Recommendations

2. Organizationally separate acceptance authority for contractor
p. 89 goods and services from the requirements organizations to ensure technical objectivity. The Logistics Service, or whatever FAA organization is to exercise overall authority for the Quality Assurance function, should provide trained field representatives wherever contractor performance must be evaluated. Alternatively, the FAA could establish professional Quality Assurance groups within the Regions to operate under the technical policy guidance and standards of the headquarters' Logistics Service. The FAA should strongly consider the use of DOD Contract Administration organizations, which already have well developed technical capabilities and procedures for managing plant activities, and redirect its own personnel to cover installation and checkout operations at FAA facilities.

Action

1. Precautions are being taken to assure separation of acceptance authority for contractor goods and services from the requirements organizations. Specifically, in-plant acceptance is assigned to Quality and Reliability Officers (QRO's) who represent the Logistics Service. Acceptance at installation sites is normally assigned to Resident Engineers (RE's) who are specifically delegated by the Contracting Officer in the Logistics Service. There have been some past contracts in which the technical officer (TO) has been assigned the authority to formally accept the first system only, in order to assure adequate evaluation of all technical considerations.

2. As indicated in Action items 2.a. and b. above the Logistics Service has taken steps "to provide trained field representatives whenever contractor performance must be evaluated" and concurrently to assist in establishing "Quality Assurance groups within the Regions to operate under the technical policy guidance and standards of the headquarter's Logistics Service."

3. Arrangements have been made with the Defense Logistics Agency (DLA) to utilize its in-plant services on 24 contracts to date. In addition, it is current practice to review each contract, prior to assignment of government responsibility for inspection and acceptance, to determine the feasibility and effectiveness of using DLA services. As indicated above, resident FAA resources are directed towards those operations for which DLA is not a reasonable alternative.

Recommendation

3. Provide formally organized field teams when representation
p. 89 at contractor work sites is needed, and designate a focal point to coordinate and lead the activities of the group and serve as the chief Government representative to the contractor. Delegate appropriate contracting officer authority to the ACO when needed, and delete the ACO designation when it is not.

Action

1. Formally organized field teams have been provided, as indicated in Action item 2.b. above for Recommendation 1. An example of such field team description is provided in FAA Order 6012.3, entitled "Implementation of Power Conditioning Systems in RML's."

2. The designation of ACO's has been re-evaluated to assure the appropriate and effective use of ACO's.

Recommendation

4. Reorient the Quality Control System Certification Program
p. 89 (FA Order 4453.1) toward reserving the right of system disapproval, rather than the present concept of approving the contractor's system and thereby transferring some measure of responsibility for its performance to the FAA.

Action

1. The standard "Inspection, Acceptance and Quality Assurance" clause used in contracts which implement the Quality Control System Certification Program was revised in November, 1975 to comply with the above recommendation. It now states that, "The Government reserves the right of disapproval over all internal operating controls and procedures used by the Contractor to implement the requirements of FAA-STD-016 and the QCSP when such controls or procedures do not achieve the objectives of the quality control system described therein."

Keegan Report: Recommendations regarding Financial Management

- Report recognizes there are inconsistencies in budget controls over participants in the acquisitions process. Particular attention to E & D resources.

- Recommendations:

III.C.1 [p. 90]

1. FAA should issue directive on delegation of authority to reprogram funds which:

   (a) Provide consistent and uniform policy regarding management of E & D and F & E funded programs.

Actions to Date:

- Order 1800.13A, Planning and Resources Allocation, revised, reissued March 21, 1977. This policy order strengthens the tie between resources management and acquisition management. The policy brings into focus the interrelationship between the longer range requirement planning process and the actual program management and acquisition.
- SAM process - Order 1810.1 -- issued March 21, 1977, as a direct result of Keegan Study, A-109, etc. Principal Policy features relating to resources planning and contract.
- Relates the total acquisition cycle to resources planning and allocation at all stages.
- Requires clear identification of estimates resources before the requirement is approved.
- Requires total program planning including E & D or F & E is authorized to proceed.

- Requires the Administrator's approval at the initial requirement identification stage (prior to expenditure of funds; except some long range resources) as well as periodic reviews and approval by him as program progresses.
- Focus on cost benefit at initial program stage.
- Requires consideration of life cycle costs as opposed to simply acquisition costs in acquisitions.
- Establish SRG - Systems Requirements Group. This group, consisting of high level representatives of ATF, AED, AFS, APD and AAD manage and monitor the entire SAM process from identification of requirement and resource needs through implementation and commissioning. Resources planned, committed and obligated will be monitored by SRG. Variations with approved requirement statement will be reported to top management for action.
- Order 2500.3C, 8/26/76, established policy and guidelines delegating authority for F & E fiscal management including reprogramming actions.

III.C.(1) [p. 90] (b) Provide central visibility with possible direct control over reprogramming actions.

Actions to Date:

- The SRG will exercise degree of control over fiscal management for approved major acquisitions. This will include R&D and F&E.
- Order 2500.3C focus on F&E reprogramming policy.
- Reprogramming of R&D programs is currently accomplished primarily by Associate Administrator for Engineering and Development with policy guidance and broad decisions by

the Agency Review Board. Specific reprogramming criteria currently being drafted for issuance.

III.C.(2) [p. 90] 2. FAA should re-examine its financial management policies particularly with regard to full-funding concept. Improve the financial stability of acquisition programs.

Actions to Date:

- The theory of full-funding, which tends to result in large carryovers of funds from one fiscal year to another has major advantages for program accomplishment. With year-to-year appropriations, major problems result in partial funding with the risk of not being able to complete the program in future years. The full-funding concept, however, is under study and continually being reviewed to assess its suitability as basic fiscal policy by FAA.
- The SAM Process focuses management attention on fiscal consideration, early in the acquisition cycle as recommended. It also provides a means of continuous monitoring throughout the life of the program to better ensure fiscal integrity and ultimate benefits consistent with the costs.

Keegan Report: Recommendation regarding Acquisition Management Indicators

- The Management Information Manual contains almost no "management indicators" dealing specifically with the acquisition process.

- Recommendation:

[p. 46, 90] III.D.1 That FAA institute a program for conducting recurring management reviews of the FAA functional organizations.

Actions to Date:

- A specific page titled "System Acquisition Management" has been added to the Management Information Manual covering the initial implementation of the improved acquisition process.
- An expansion of the existing material in the Management Information Manual will be considered when the acquisition management process is fully implemented in March 1978.

Keegan Report: Recommendation regarding procurement management reporting.

- Some important management indicators are not being collected and reported to either middle or top management.

- Some key items of interest to ALG-300 management are currently being collected and followed in a somewhat disjointed manner.

- Pending procurement of an automated tracking system would involve a substantial commitment of FAA money and personnel resources if undertaken.

- Recommendations:

1. p. 91 Contracts Division should review its operations to determine which additional management indicators would help direct attention to procurement management problems.

Action to date:

- A periodic report for the Administrator was instituted in October 1976. This report provides data on a number of procurement matters, including claims, protests, award lead time, and the 8(a) program.

- A monthly aging report on unsolicited proposals was also instituted in August 1977.

- A summary delinquency report for equipment contracts is now furnished monthly to ALG-1.

2. p. 91 At conclusion of design study phase, and prior to hardware procurement, ALG should review PITS to insure cost beneficial results can be expected.

Action to date:

- The PITS design study report is due from the contractor in January 1978. Upon its receipt, and prior to hardware procurement, a review will be made of the cost beneficial results which can be expected.

Keegan Report: Recommendations regarding Use of Long-Term Contracts within the FAA

. FAA's continued use of development and production contracts with extended multi-year priced quantities for production may cause significant difficulties in the years ahead.

. Recommendations:

1. FAA should reassess its practices with respect to contracts
p. 91 calling for deliveries over many years, the use of long-term fixed price production options, and failure to use the contracting techniques available to offset the effects of unanticipated inflation.

2. FAA should adopt a strong policy against the use of extended
p. 92 contracts periods in all but the most exceptional cases. The use of economic price adjustment provisions can reduce the risks of inflationary condition, but even this technique cannot be expected to be very accurate for contract performance extended over a period of five years or more.

Actions to date (consider both Recos 1 and 2):

. The revision of FAA Order 4400.41A on Advance Procurement Planning of 21 December 1976 established policy and procedures to accommodate these recommendations of the Report. The Order provides that such plans be coordinated with appropriate offices or services involved in the procurement to assure that all aspects of the procurement are properly related and include, where applicable, special clauses, e.g., an economic price adjustment, needed in the contract or peculiar to the procurement. Under the procedures of Order 4400.41A we are striving to limit the terms of contracts to shorter periods of performance, thus in most cases, obviating the need for use of an economic price adjustment clause. If the FAA does have a requirement that would require extended contracting, an EPA clause can be developed for the specific procurement under procedures of Order 4400.41A.

3. Program decision points should be focused on the two recommendations
p. 92 given above with the aim of enforcing the FAA policy.

Action to date:

. The coordination and review procedures established in FAA Order 4400.41A, Advance Procurement Planning, December 21, 1976, provide the mechanism to control the use of long-term contracts. FAA Order 1810.1 (System Acquisition Management) of March 21, 1977, established procedure for high-level oversight and control in the formulation

stage of major system requirements. The Order requires the approval of the Administrator of "milestone and decision point schedules prior to the initiation of any acquisition action for a major system." Such review will act to enforce the recommended policy.

4. The FAA should immediately review and adopt, as practical, the
p. 92 use of Economic Price Adjustment (EPA) approaches similar to those used by other agencies of the Executive Branch for those FAA programs which still require extended year contracts. Some orientation will be required for personnel involved and full advantage must also be taken of the "lessons learned" from other agencies using these techniques.

Action to date:

. We believe that the best practice for FAA is to limit the maximum duration of our contracts to a 3-4 year period. If the FAA does have a requirement that would require extended contracting, an EPA clause for the specific case can be prepared by procurement personnel who have experience in the development and application of such clauses. An example of the usage of such an EPA clause is the Westinghouse Contract for the ARSR-3.

Keegan Report: Recommendation regarding contract delinquency rate and reporting procedures.

. Review disclosed that a significant number of contracts are delinquent. Until recent months, reporting and corrective action on these delinquent contracts had not been organized.

. Recommendations:

1. Contracts Division should develop a good system for collecting contract
p. 92 delinquency information for active contracts.

Action to date:

. A system was instituted in July 1977 where the contract specialist furnishes, on a monthly basis, a report on all contracts which are more than 30 days' delinquent. The report indicates extent of delinquency, reasons for delay, and what action is being taken to cure the delinquency.

2. That contract delinquency data be made visible to responsible FAA
p. 92 management to emphasize need to control contract delinquencies.

Action to date:

. A summary delinquency report for equipment contracts is now furnished monthly to the Director, ALG.

. Delinquent contracts are also discussed at the monthly workload meeting.

3. Potential of DOT Contract Information System (CIS) be explored to
p. 92 determine how its data base can be used to anticipate and manage contract delinquency and close-out issues.

Action to date:

. The CIS data base was explored with DOT in April 1977 and found to be impracticable in anticipating and managing contract delinquency and close-out issues. However, the delinquency reporting system described above is responsive to the intent of the recommendation, and contract close-out receives management attention on a continuing basis.

Keegan Report: Recommendation regarding proper use of contract types.

- FAA effectively eliminates all contract type choices between the extremes of Cost Plus Fixed Fee (CPFF) and Firm Fixed Price (FFP).

- Recommendation:

p. 93

FAA should immediately undertake a review of their use of contract types. This effort should determine how the necessary training and reorientation (including the removal of any unwritten administrative controls) can be accomplished at all levels within FAA to result in proper selection of contract type. One of the objectives should be to assist technical and procurement personnel in identifying those situations where fixed price contracts are inappropriate for the technical risks involved and could cause excessive costs if used.

Action to date:

- A review of contract types used has been made as recommended. As a result there currently has been an increase in the use of incentive type contracts.

- Since August 1976, contracting personnel have been assigned to training courses in recent years both at the FAA Academy and in the Washington area. In addition, many contracting people have come from other agencies, especially agencies within DOD and have received extensive contracts training and experience there. Technical personnel in FAA have been assigned on a regular basis to a procurement orientation course, which has sensitized them to the issue of contract types.

- Forty-two of the sixty-six person professional staff have attended courses which cover Incentive Contracting and many of these people have attended more than one course on the subject.

Keegan Report: Recommendation regarding Pre-Award Survey (PAS) procedures.

- Guidelines do not specify when the Procuring Contracting Officer (PCO) should request an on-site PAS.

- Supporting rationale on desk-type surveys made at PCO level is often poorly documented.

- No apparent use is made of PAS resources which can be made available by other Government agencies.

- Recommendations:

1. That guidelines be developed jointly by ALG-300 and ALG-400 to
p. 93 specify which types of procurements should use on-site (Type A) surveys.

Action to date:

- A Contracts Division Instruction was issued in April 1977 to provide guidelines on when on-site pre-award surveys should be made. These guidelines generally state an on-site pre-award will be made when desk type data or personal knowledge data do not satisfy the requirements of the FPR.

2. Contract Division should emphasize the need for improvement of support
p. 93 documentation for (Type B) Pre-Award Surveys.

Action to date:

- The above-mentioned Instruction requires the contract specialist to state in writing what sources were used in assuring the adequacy of the (Type B) survey.

3. FAA contact appropriate officials and initiate a test using DOD
p. 93 Pre-Award Survey resources as supplement to the existing FAA practices.

Action to date:

- A meeting was held in June 1977 at Defense Logistics Agency (DLA) headquarters to discuss acceptability of procedures. DLA is now performing a pre-award survey for FAA. It should provide a valid test of DLA response time.

Keegan Report: Recommendation regarding Impact of Budget and Requirement Instabilities on Procurement.

- Report notes excessive instability in the workload in Contracts Division due to underfunding of procurement requests, changes in technical requirements and program cancellation when requirements found invalid.

- Recommendation:

[p. 61, 94] III.J.1 Top management review this area to determine where requirements validation, program estimating and/or budgeting strategy. Should review in-house cost estimating capability with view to improve.

Actions to Date:

- Improvement of the process for validation and monitoring of system requirements was established by Order 1810.1, System Acquisition Management. (Chapter 4)
- Improved integration of planning and budgeting procedures with acquisition management was institutionalized by Order 1800.13A, Planning and Resource Allocation.
- The Airways Facilities Service has established improved standard internal procedures in two recent policy directives, AF Order 6011.4, F&E Cost Estimating Procedures and Summaries Handbook (Sept. 1976) and AF Order 6011.2, Airway Facilities Service F&E Future Program Development Procedures (July 1977).

Keegan Report: Recommendations regarding status of DOT Procurement Policy Guidance

- Many Department of Transportation (DOT) procurement policies and procedures are so out of date that they cause considerable "work around" and confusion within the FAA.

- Recommendations:

1. The FAA should request OST to expedite the review, coordination,
p. 94 approval and distribution of the DOTPR revision which is now in process. Because the DOTPR changes mainly deal with catch-up matters, the FAA should pursue. A comprehensive revision of the DOTPR with the DOTPR Committee. New areas for improved and innovative procurement policies and techniques should be investigated. The effort should include a review of past weaknesses in DOT procurement actions (from review records, interviews, etc.) and a survey of techniques now employed by other agencies, such as Design-to-Cost, "muder boards," etc.

Action to date:

- Specific recommendations for survey of techniques used in other agencies have been presented via FAA representative on the DOTPR Committee.

- DOTPR update was in Federal Register on September 8, 1977. Update in printing and expected to be distributed in November/December 1977.



27-075 O - 78 - 11

2. The FAA should review other DOT procurement guidance
p. 94 documents, including the boilerplate forms, and recommend appropriate revisions, if necessary.

Action to date:
There is a continuing, ongoing effort by both the DOT and the FAA in this area:

- The following FAA boilerplates have been developed, issued, and are being maintained current:

  FAA P.1 Fixed Price Construction Contracts greater than $10,000;
  FAA P.2 Fixed Price Construction Contracts between $2,000 and $10,000;
  FAA P.7 Fixed Price Supply Contracts;
  FAA P.8 Utility Contracts;
  FAA P.9 Architect and Engineering Contracts;
  FAA P.10 Services Contracts;

- The DOT has furnished copies of these boilerplate

- Amendments have been made to the following Standard Forms (SF) by the FAA.

  SF 19A Labor Standards Provisions;
  SF 19B Representations and Certifications;
  SF 22 Instructions to Bidders;
  SF 33 Representations and Certifications;
  SF 33A Solicitations: Instructions and Conditions.

- Procurement guidance documents will continue to be revised and issued as necessary.

Keegan Report: Recommendation regarding the status of FAA Procurement Policy Guidance.

- The FAA has allowed its prospective procurement policies to become out-of-date. Comprehensive, uniform policies and procedures would help procurement personnel to make prompt, well-informed decisions and improve the quality of FAA procurement.

Recommendations:

1. p. 95 FAA should follow up and emphasize the FAPR update. The key person, who has been responsible for the FAPR for many years will retire soon. New employees are being trained; a major FAPR update would provide training under the leadership of the retiring expert.

Action to date:

- Key replacement individual has been trained.

- FAPR Change 4 - A major change was printed and distributed in August 1977. Change 5 was signed October 14, 1977, and is currently being distributed.

2. p. 95 As part of the FAPR update, FAA should proceed with the integration into the FAPR of all FAA orders which deal with procurement policy matters.

Action to date:

- The parts of existing orders which relate to procurement concerns are being integrated into the FAPR. Furthermore, all procurement orders are filed in one section of the FAPR. For that reason, a lower priority has been assigned to the implementation of this recommendation.

3. The suggested consolidation of procurement orders into the FAPR should also include all orders issued by other FAA offices which directly deal with procurement policy issues. If the question of retaining primary responsibility becomes critical, those organizations outside the Logistics Service could keep their authority, but prepare the guidance in the form of FAPR provisions.

Action to date:

- The agency does not accept this recommendation. The FAPR is the definitive FAA procurement authority and guidance document and should not include orders which are at best peripheral to procurement.

Keegan Report: Recommendations regarding DOT Operations Overview.

- Department of Transportation's operations overview of relatively low value procurement actions severely impacts FAA procurement activities. It is questionable that this overview has provided a substantive positive effect on the quality of FAA procurement.

- Recommendations:

1. The FAA should continue to follow-up earlier attempts to
p. 95 persuade OST (I&L) to grant across-the-board adjustments of the dollar thresholds for overview from source selection activities for some major programs should also be examined with DOT.

Action to Date:

- Follow-up has been made of earlier requests to persuade OST (I&L) to grant across-the-board adjustments of the dollar thresholds for overview in the operations area. A letter was sent May 9, 1977, from AAD-1 to TAD-1, requesting that FAA, be allowed to review and approve all contracts above $100,000, without further review and approval by the Department.

- The agency in each Selection Plan submitted to the Department, requests that Source Selection Authority be delegated to the FAA Administrator.

2. The FAA should review and adjust, as necessary, all FAA
p. 96 controlled orders, regulations and practices which implement OST (I&L) direction, so that the FAA requirements do not create more stringent review than required by DOT unless justified on the basis of sound business judgment.

Action to Date:

- The pertinent FAA and DOT orders have been reviewed. In the one case, where FAA procedures commenced under the minimum mandated by DOT; FAA revised its Source Selection Order to delete that requirement.

3. The FAA should participate with OST (I&L) and the other modal administrations, in the recent task force on revising Contract Review Board procedures, in developing new approaches to operations overview by OST (I&L). The purpose be to provide more effective visibility for the Department and establish credibility for FAA's procurement system. If the differences of approach and opinion can be minimized, an improving relationship between the two groups should eventually result in increasing levels of overview responsibility being returned to FAA.

Action to Date:

- Letter sent May 9, 1977, from AAD-1 to TAD-1, which submitted FAA recommendations on DOT's proposed implementation of draft DOT Order 4200. , on Review of Proposed Contract Awards. Verbal follow-up made. No DOT response to date.

- FAA has participated, in calendar year 1977, in a Task Group effort in drafting the proposed implementation of OMB Circular A-109 relative to Major Systems Acquisition.

- The Department has recently requested the nomination of FAA personnel to serve on a Task Group to revise and update DOT Order 4200.9 regarding the Transportation Systems Acquisition Review Council. The group has not yet convened.

Keegan Report: Recommendation regarding use of DOT Contract Information System (CIS)

- Considerable FAA effort is required to put data into the CIS, but FAA managers make little direct use of the CIS. Also, effective use of the CIS may be impaired because the system needs improvement.

- Recommendations:

1. The FAA should formalize control of all special requests
p. 96 for "status" information on procurement management matters at some focal point within ALG-300 or ALG-100. Requests should be examined by the focal point to insure the CIS system can't provide it before any manual search is undertaken.

Action to date:

- Letter sent on December 20, 1976, from ALG-1 to Heads of Offices and Services, which advised them of the availability of DOT's Contract Information System for providing up-to-date contract information and that ALG-300 is the focal point of the CIS to find out whether the CIS contains the required data.

2. The FAA should work with DOT to update the CIS data base
p. 96 as necessary.

Action to date:

- FAA is continuing to work with DOT to update the CIS data base and more emphasis has now been placed on the need to keep the data as current as possible.

3. The FAA should request OST (I&L) to brief FAA procurement
p. 97 managers in some kind of an extended workshop format on the potential CIS offers for internal management control. The workshop should allow for feedback from the procurement managers on how the CIS could be improved.

Action to date:

- At the 1976 and 1977 Procurement Conferences, OST briefed conference attendees (regional and headquarters procurement managers) on the CIS and the potential if offers for internal management control.

- The workshop format allowed feedback from the procurement managers in the CIS.

- The agency is currently using the CIS to satisfy more of its internal management control information needs. It is also used to satisfy special requests from outside sources for numerical and dollar value of contracts awarded. It is also used to aid evaluation teams in identifying and analyzing work loads, and areas to be reviewed in detail during field evaluations.

Keegan Report: Recommendation regarding FAA Handbook 1100.2.

. Report points out Chapter 46 (Logistics Service) of organizational handbook contains out of date material and document is incorrect in key areas of delegation of procurement approval authority and relationships with other FAA groups.

. Recommendation:

p. 97

Handbook 1100.2 should be revised and improper and conflicting delegations of procurement authority not in consonance with FAA Order 4405.1B should be removed.

Action to Date:

. Change 165 to Chapter 46 issued September 22, 1976 revises limitations on delegated authority for contracting to conform to Order 4405.1B.

. Effort underway prior to Keegan Study to update other material in Chapter 46 completed by issuance of various minor changes.

Keegan Report: Recommendation regarding Procurement Trainee Program.

- Report advocates small group of procurement trainees be recruited in view of FAA procurement work force averaging 45 years of age.

Recommendation:

- FAA place top management emphasis on implementing procurement
p. 97 recruitment and trainee program.

Action to date:

- The agency has, for some time, been in a restrained recruitment posture and, thus, has been unable to set aside positions for a formal recruitment/trainee program. There is now a DOT Management Intern Program in existence from which FAA can possibly draw qualified people. Also, there is an abundance of former procurement interns from other agencies in the D.C. area to draw on.

- FAA contracting and procurement people are regularly scheduled to attend agency conducted and outside the agency training courses to develop needed proficiencies in the procurement field. Since August of 1976 FAA procurement people have collectively attended some 64 courses covering a wide variety of subject areas dealing with the contract and procurement field.

- In recruiting, the Logistics Service endeavors to secure that balance between younger and older personnel that will provide for the reduction in the average age of its contract and procurement work force, without reducing the overall level of professional experience essential to its job requirements.

- Since August of 1976, ten contract and procurement personnel with an average age of 47 years have been separated for all causes (retirement, resignations, transfers, etc.). Over the same period ten new people have been hired with an average age of 42 years.

- In addition, since August 1976, three people averaging 27 years of age, who have demonstrated proficiency for contract and procurement work, have through an informal internal on the job training program been successfully moved into contract/procurement type positions from secretarial/clerical administrative positions.

Keegan Report: Recommendations regarding the Role of the Office of Accounting and Audit in the FAA Procurement Process.

. The Office of Accounting and Audit, External Audit Division, has many responsibilities in the procurement process. Although it must continue to be available on an "as needed" basis for all contracting matters for accounting control of external assistance requests on reimbursement by the FAA, some streamlining is required.

Recommendations:

1. That proposed revision of FAA Order 2930.1A, Audit Participation
p. 98 in Procurement and Contracting should be approved and implemented.

Action to date:

. FAA Order 2930.1B, Audit Participation in Procurement and Contracting was issued December 27, 1976, permitting procurement personnel to deal directly with Defense Contract Audit Agency.

2. That Logistics Service Policy Branch (ALG-110) should initiate
p. 98 appropriate revisions to FAA Order 4400.12A, Use of a Negotiated Team, to make audit participation in negotiation sessions optional at the discretion of either the Contracting Officer or the Office of Accounting and Audit.

Action to date:

. The agency does not agree with this recommendation and intends to use an auditor as a member of the negotiation team on all negotiated procurement actions where the estimated cost exceeds $100,000.

Keegan Report: Recommendation regarding computer applications in pricing.

- Computerized techniques now available in the pricing field need to be adopted by FAA and conscientiously applied.

- Recommendations:

1. p. 98 If automated pricing concepts are found practical, the necessary terminals and training should be acquired. The terminals must be physically located in the Pricing Office. Full advantage should be taken of the COPPER IMPACT Programs.

Action to date:

- An automated pricing system was put into effect in February 1977. A terminal is located in the pricing staff office. Personnel have been trained in its use. Full advantage was taken of the existing COPPER IMPACT Programs.

2. p. 98 Procurement line management continually monitor the training and utilization effort to assure maximum use of all system capabilities.

Action to date:

- Procurement line management is continually monitoring the usage of the automated pricing system. All pricing personnel have been trained in its use to assure maximum utilization. In addition, management is currently reviewing system capabilities and future expansion plans include the development of a cost estimating system and application of learning curve techniques on appropriate production contracts.

Keegan Report: Recommendation regarding management review of pricing objectives.

- There is little apparent formal review of pricing objectives for the majority of FAA negotiated procurements.

- Recommendations:

1. Contracts Division management consider adopting some form of
p. 99 pre-negotiation review of the pricing objective.

Action to date:

- The agency agrees that there should be management review of pricing objectives on major negotiated procurements. Implementation is in process.

Keegan Report: Recommendation regarding the subject index of procurement subjects.

- The Policy Branch (ALG-110) is developing a topical index to help procurement personnel identify and locate the rules applicable to procurement subjects. Although such an index may have some limited usefulness, other agencies have sometimes found the preparation and maintenance to be uneconomical.

Recommendation:

p. 99 . The FAA should evaluate the topical index as it is presently constituted to assure that it continues to offer cost-beneficial results. If not, the FAA could reform the index to obtain greater depth or discontinue the project.

Action to date:

- Questionnaires were sent to all procurement offices relative to usefulness of the topical index.
- Answers received were evaluated, and the index continues to be useful to procurement personnel.
- A revision to the index has been completed and is in printing.

Keegan Report: Recommendation regarding joint use of contracts distributed within the Logistics Service.

- A seemingly large number of copies of each contract and its modifications are distributed internally within the Logistics Service. Greater joint use of the central contract files might be more economical.

- Recommendations:

1. Contracts Division review current contract distribution practices
p. 100 to determine if more joint use of the central contract file is practical.

Action to date:

- Distribution practices have been reviewed and distribution lists updated. More joint use of the central contract file was not found practical due to problems that could be expected with inaccessibility of the contract file and the maintenance and filing of contract documentation.

Keegan Report: Recommendation regarding contract distribution to Vital Records Center.

Copies of a large volume of documents generated by ALG-300 are being collected and distributed to the Vital Records Center. The cost of extra printing, collection, handling, mailing and storage may be unwarranted for these routine documents.

. Recommendations:

1. Contracts Division research and reevaluate the vital records
p. 100 selection criteria for future submissions.

Action to date:

. The review made resulted in discontinuance of sending copies of purchase orders to the Vital Records Center. The need for copies of other documentation was confirmed and distribution of such records continues.

2. Inquiry should be made to insure that previous submissions are
p. 100 being regularly purged on an appropriate time-phased basis.

Action to date:

. Arrangements have been made to periodically conduct on-site reviews of materiel stored at the relocation site, directed towards purging files of outdated materiel. The last one was conducted in June 1977.

. An appropriate issuance to provide a more formal means for accomplishing purging on a time phased basis in planned for issuance by December 31, 1977.

Mr. BOND. In your review of our procurement process, you have indicated a desire to discuss three specific cases: FAA negotiations with the Space Research Corp. in 1973 for a radar simulation facility at Oklahoma City; the FAA procurement from Westinghouse of the ARSR-3; and FAA's contract with General Dynamics and the resulting contract dispute involving the production of ASR-8 radars.

It is not my intention to offer a lengthy explanation of the FAA's decisions in these cases. Issues related to the simulators and the General Dynamics contract are in litigation, while the ARSR-3 production contract is substantially on schedule with no unusual problems. However, there are management issues raised in connection with these cases which are worth discussing in relation to the SAM process.

Several years ago, the FAA, on two occasions, unsuccesfully attempted to acquire a modern simulation capability for use in training air traffic controllers. After two unsuccessful efforts, we made a major effort to better define the training requirement and determine how that requirement might be met.

An independent group, the Institute for Defense Analysis, reviewed various technical alternatives and alternate approaches to the agency's training program for controllers. That group determined that much of the training could be carried out at our auto-

mated terminals and centers, and that a different type of simulation program should be utilized in our training academy in Oklahoma City.

Based on this new statement of requirements, we are proceeding to acquire a modern radar training facility. Ground will be broken on a new building in Oklahoma City next month. We have received competitive proposals from a number of contractors who appear to be well qualified to provide us with equipment to provide the simulation capability we need. We are keeping the committee staff informed of our progress on a regular basis.

I describe these events simply to point out that if this requirement arose today, the principals of the SAM order would require these types of alternative approaches to be explored during the study, definition, and validation of the requirement.

The ASR–8 award to General Dynamics was an award to the low bidder for a fixed-price type production contract. When General Dynamics later encountered technical difficulties, the agency agreed to restructure the contract to obtain a single radar system from General Dynamics on a cost type arrangement with a ceiling price. The contract provided that General Dynamics would proceed to completion at its own risk if the ceiling were exceeded.

Subsequently, General Dynamics refused to perform, and a default notice was issued. The repurchase from Texas Instruments resulted in the final systems being delivered on a schedule consistent with that in the General Dynamics contract. In this case, the agency's action was directed toward obtaining badly needed radars in as short a time as possible.

I should note that today for such a major redirection of effort, the SAM process would insure that the analysis and alternatives would be fully documented prior to any similar decision. In addition, such action would formally be brought to the attention of TSARC.

I also wish to point out that the performance of the Texas Instruments ASR–8 radar system has been completed satisfactorily and has proven to have increased reliability compared to all other FAA ASR systems in operation. In addition, the ASR–8's have met or exceeded all specified operational requirements.

With regard to ARSR–3, the first contract was awarded to Westinghouse after a competitive solicitation, on a cost-plus basis. After an escalation in the estimated costs, the agency reduced the scope of the general effort and added funds somewhat in excess of those originally contemplated.

Although the work performed by Westinghouse was not complete as originally intended, it was determined to be sufficient to allow a competitive procurement for production quantities. Accordingly, a two-step formal advertisement was initiated, and Westinghouse was selected as the low responsive, responsible bidder.

It is anticipated that the first production radar, expected to be delivered in February 1978, will test out to be an excellent product.

Under today's new SAM process, the decision to discontinue the prototype effort and enter a contract for production would be formally and fully documented with attendant analyses prior to the approval by the Administrator of such action.

In conclusion, our accomplishments to date include a complete revision of our acquisition management process emphasizing requirements definition, planning, and monitoring activities.

We have also revised and updated our planning and resource allocation policies and directives at the same time. We have established a system to manage and monitor the acquisition process which I have described.

In the procurement area, the Air Force study team made 37 specific recommendations. Most of these recommendations have been implemented already, and several are still in process but well underway. I believe you can see that we are moving forward and have made substantial progress in the last year or so in improving our acquisition management process.

I want to emphasize that these improvements I have described were not undertaken as the result of the Air Force study alone. As a result of the in-house study I referred to earlier, and some of the recommendations of the Committee on Government Operations, work was begun in 1975 to develop the conceptual framework for our improved acquisition management and financial management procedures.

The system acquisition process is complex. As a result of almost continuous study, the process has evolved to the procedures I have outlined here today. Our process is new. But the process contains many procedures by which it is constantly being studied, critiqued, and revised. As Administrator, I intend to insure that the FAA's acquisition process is effective.

Mr. BURTON. I thank you very much for your statement, Mr. Bond. You did admirably well, considering what you had to deal with. As I said earlier, I hope these hearings are as much for your benefit as they are for our benefit because, although you are new, many of the people involved in what we would consider some of the procurement horror stories are still in responsible positions within the agency and, hopefully, handling those responsible positions in a more responsible manner.

I have several questions related to the various procurement issues—the ASRS-3; the ASR-8. Specifically, the ASR-8 contract modification and what, if anything, went on in Florida, et cetera.

I would think that the best thing for the subcommittee to do would be to recess until 1:30, so that we will have a chance for lunch, and then we could come back immediately at 1:30. I know that other members of the subcommittee also have several questions. So the subcommittee will be in recess until 1:30.

[Whereupon, at 12:05 p.m., the subcommittee recessed, to reconvene at 1:30 p.m., the same day.]

AFTERNOON SESSION

Mr. BURTON. The subcommittee will reconvene.

I would like to just read something from a Government Operations Committee report entitled "Federal Aviation Administration's Procurement of the Electronic Voice Switching System." It is a result of this subcommittee's investigative work under the chairmanship of Jack Brooks.

This was an FAA contract. And, again, Mr. Bond, I'm sure a lot of this will be news to you. At least, I hope that it is.

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But in the EVS contract FAA blew another $12 million of the taxpayers' money. The chairman's comments in the report were rather philosophical. He wasn't sure that FAA would ever really do the right thing unless there were possibly even some personnel changes.

A lot of those people are still around. You weren't; but they are still there.

I think this may or may not still hold true.

I have so many questions, I honestly don't know where to start.

I would really like to find out about the modification of the contract. I want to find out what, if anything, happened in Florida; how did it come about; why aren't there records? Is it really in the national interest to, in effect, give that kind of money to a corporation so that they can stay competitive in a business in which they weren't even going to try to be competitive?

I guess you couldn't answer that?

Mr. BOND. This is the General Dynamics contract?

Mr. BURTON. Right.

Mr. BOND. I would like to suggest that Jeff Cochran answer that.

Mr. BURTON. I would like to hear from both he and Mr. Frakes.

Mr. COCHRAN. In the case of the ASR-8, as Mr. Rider explained this morning—let me start back a little bit, Mr. Burton, before the ASR-8, because I think it's reasonably important that we do.

We had been buying the ASR-4, 5, 6, and 7 from Texas Instruments.

There was a desire on the part of the management of the FAA—and I believe on the part of the Department also——

Mr. BURTON. What's the Department?

Mr. COCHRAN. The Office of the Secretary of Transportation.

Mr. BURTON. Would that be Mr. Beggs?

Mr. COCHRAN. I was referring to the entire Department.

Mr. BURTON. I know that; I'm referring to the initial decision.

Mr. COCHRAN. Well, he was in the Department of Transportation in the Office of the Secretary.

Mr. BURTON. He made the decision.

Mr. COCHRAN. I want to say this. There was a desire that the ASR-8 contract be a competitive contract.

Mr. BURTON. Yes; that's very desirable.

Mr. COCHRAN. In other words, the desire to maintain competitiveness in the contract.

We originally solicited 64 companies to bid on the ASR-8, I believe.

Mr. BURTON. With all due respect, I am fairly up to date on this. You could submit this for the record sometime. But we know where we are today. We know that FAA recommended Texas Instruments on the technical merits—notwithstanding there was a cost differential that could have been as little as $500,000.

But we know that you did recommend Texas Instruments on what you felt were the merits, and certainly it looks like the right decision the way things worked out. You wanted to go with Texas Instruments; the Department of Transportation overruled that, and the bid went to General Dynamics.

Did you object very much when this decision was made? Or how strongly were you able to pursue your case with them?

Mr. COCHRAN. I think we presented a reasonable case for the award of the contract to Texas Instruments to the official that made the decision.

I think Mr. Rider has described that case pretty well in his chart. He has described the areas pretty well as we had discussed them. I think we had a discussion that lasted 2 or 3 hours with the selecting official at that time, recommending the award of the contract to——

Mr. BURTON. Who was the selecting official?

Mr. COCHRAN. It was Mr. Beggs.

Mr. BURTON. It would help during all the testimony if you would supply the names. If you would rather not give names, then you can give the title. I'm going to have to ask the name if I don't know.

At the end of that, your arguments——

Mr. COCHRAN. Our arguments did not prevail.

Since we had declared both of the contractors technically responsive to the proposal as it was submitted, the contract was awarded on the basis of the low price by General Dynamics.

Subsequent to that time——

Mr. BURTON. The contract was awarded purely on the cost difference?

Mr. COCHRAN. Yes.

Mr. BURTON. So you people actually couldn't have sworn on your children's lives that General Dynamics might not be able to deliver?

Mr. COCHRAN. No, sir.

Mr. BURTON. In other words, you couldn't go that far. You had questions, but——

Mr. COCHRAN. General Dynamics was a large company and a responsible manufacturer. They had submitted a technical proposal that, in our view, was acceptable. Therefore, we couldn't cite positively they couldn't do it. We thought the risk was high.

Mr. BURTON. What do you mean by acceptable and high risk?

Mr. COCHRAN. Both contractors had technical proposals that were rated. We rated those two technical proposals, and rated the Texas Instruments technical proposal considerably superior to General Dynamics.

Mr. BURTON. That's not counting the risk factor?

Mr. COCHRAN. That's correct.

Mr. BURTON. So in other words, if you were reading the pieces of paper, Texas Instruments was better if there wasn't any risk factor. Then you take in a risk factor and it puts Texas Instruments in a much stronger position for the taxpayers' money to be invested in them; wouldn't it?

Mr. COCHRAN. That's correct.

Mr. BURTON. I don't know whether or not you could have pushed hard or not. Mr. Beggs and DOT made that decision. If you had had your way and Mr. Beggs hadn't awarded the contract to General Dynamics, conceivably the hearing at least wouldn't be on ASR-8.

The modification of the contract with General Dynamics: There seems to be no record or documentation as to when it happened, except a statement it happened before July 17, 1974.

Mr. BOND. Perhaps Mr. Weithoner could address himself to that. In his position, he oversees the contracting office, that is, our logistics service.

Mr. WEITHONER. I can at least in part, Mr. Chairman. At least I can give you some of the background.

At the key point in the summer of 1974 when Mr. Frakes and Mr. Cochran returned from their trip to Florida——

Mr. BURTON. Which trip was that?

Mr. WEITHONER. That was the trip that was alluded to by Mr. Rider when they went down and toured the plant and talked with General Dynamics officials.

If my recollection is correct—it is now 3 years ago—there was a meeting almost immediately with the Deputy Administrator, Mr. Dow. There were two or three other people present in the room. I was one. Mr. Cochran and Mr. Frakes were also there.

They went through what they found and explored the alternatives for Mr. Dow. He asked a lot of questions and considered what should next be done.

There was no memorandum prepared, to my knowledge, summarizing the results of that meeting. I believe it was held immediately after their return—I think the following morning after their return.

Mr. BURTON. Was that a discussion where options were proposed and decisions were made?

Mr. WEITHONER. Options were considered.

Mr. BURTON. Such as: How do we get out of this one?

Mr. WEITHONER. They looked at various ways of proceeding, yes, sir. There was not a final decision. To the best of my knowledge, that decision was made several days after that—after there had been some consultation with the Administrator, Mr. Butterfield. I was not present at that meeting.

But we did explore, and Mr. Dow considered various things, that were brought up.

Mr. BURTON. That was at the meeting immediately following the return of Messrs. Frakes and Cochran, and then at a later meeting with Mr. Butterfield, at which you weren't present?

Mr. WEITHONER. That's correct.

Mr. BURTON. Were you present at the meeting with Mr. Butterfield?

Mr. COCHRAN. Yes, sir. I was present at the meeting when Mr. Dow presented the alternatives that were presented to he and Mr. Butterfield.

Mr. BURTON. The alternatives presented to Dow were presented by the two of you gentlemen after your visit to the plant?

Mr. COCHRAN. We certainly discussed all of the alternatives. I don't know that we presented all the alternatives. Some of them, I think, were suggested by others.

Mr. BURTON. After hearing your reports?

Mr. COCHRAN. Yes.

Mr. BURTON. Like what others?

Mr. COCHRAN. Essentially these were the alternatives that were available: To continue with the contract with General Dynamics for the full quantity of radars and for the antenna. To default General Dynamics was another alternative.

Mr. BURTON. In other words, they had breached the contract. You were going to hold them to their contract.

Mr. COCHRAN. We would have attempted to. The first alternative would have been to hold them to the contract. It was a fixed-price contract for a fixed number, and we would have attempted to have gotten delivery of those radars under that means.

The second alternative was to have them default. The third alternative was to ask General Dynamics if they would consider subcontracting for the radars with another manufacturer—Texas Instruments.

Mr. BURTON. That they should subcontract with Texas Instruments to fill an order that they originally beat Texas Instruments out of, really doesn't make much sense except to save somebody's face, does it?

I don't think it's an evil thing, but I also don't think it makes much sense. It looks like a face-saving device.

Mr. COCHRAN. I believe I threw that one out as a possibility that it would have been accomplished.

If your interest is in getting the radars, as mine was, just as soon as I could get them out in place, Texas Instruments appeared to be in the position to manufacture radars.

Mr. BURTON. For General Dynamics?

Mr. COCHRAN. If the price was right, I'm sure they would manufacture for anybody.

Mr. BURTON. What was the other option?

Mr. COCHRAN. The other option was the possibility of restructuring the contract to include 1 radar set and 40 production antennas.

Mr. BURTON. Who offered that one?

Mr. COCHRAN. I don't recall who offered that alternative. I certainly discussed it and understood it. I don't recall who offered it.

Mr. BURTON. How did you understand it?

Mr. COCHRAN. I understood it well. I understood that we would get one.

Mr. BURTON. Everybody understands that. We could have bought a radio from them for the money.

But did you understand the logic behind that type of giveaway of——

Mr. COCHRAN. The discussions that I had with General Dynamics in a couple of meetings in our headquarters building and then the discussion Mr. Frakes and I had with them in Florida—they represented to us that they were interested in the radar business; that they were interested in building the ASR–8; and that they would be a competitor in the ASR–8 field in the future.

Mr. BURTON. So you felt it was your duty to the taxpayers to let them build one at a price like that? So you let the taxpayers pay $10 million or so for one system that was of questionable value. The benefit of doing that would be that General Dynamics might then remain competitive in the radar business. Is that FAA's function?

Mr. COCHRAN. As I tried to explain at the beginning of the statement I made about the system, it was on a lot of people's minds that we have competition for the radar sets. That we had been in a sole source posture with Texas Instruments.

Mr. BURTON. I agree with that. But is it the FAA's responsibility to subsidize corporations to do that?

Mr. COCHRAN. No, sir. I did not say that.

Mr. BURTON. But that's really what we did. That seemed to be the logic for it—to let them remain competitive.

Mr. WEITHONER. Could I answer that please?

There was another alternative proposed, I believe. I have not discussed this with Mr. Frakes and Mr. Cochran.

Another alternative would have been to buy the 40 antennas only and not buy the radar and not complete the radar contract. We did have a separate need for 40 antennas, and they could have been used without buying this 1 radar.

Mr. BURTON. At the going price?

Mr. WEITHONER. I think the price was around $2 million for just the 40 antennas. It was something on that order.

Mr. BURTON. So we could have paid $2 million. We might have ended up with 7 antennas for the $2 million, but there was a chance at least to get 40.

Mr. WEITHONER. At least that was discussed as an option. I don't know that it was ever pursued.

The second point I would like to make is that what Mr. Cochran has been describing is the range of alternatives that were discussed. He did not recommend or endorse the option that you just asked him about.

Mr. BURTON. When you went down and you saw the real situation at General Dynamics, did you meet with their officials? Was there a conversation between you and their officials? Did you say to them: "There's no way in the world you can do this." Or, "What are you doing?" What kind of conversation did you have with them when you went down there?

Mr. COCHRAN. To structure it just a little bit and give us a full understanding of where we were, we had had a report from our people who had recently—both Mr. Frakes and myself had had people who had been to visit General Dynamics.

We went down there and conducted a fairly detailed program review with them. We looked at the program status in considerable detail. We made a visit to the facility to see how they were facilitated to carry out this function.

We reviewed the prospects with them there.

Part of the reason for our review at the time, Mr. Chairman, was to have this review in front of responsible General Dynamics personnel.

Part of the reason that Mr. Frakes and I thought that we would like to go to Orlando—and we were asked to go there by the Deputy Administrator—was to conduct this review at a level with the General Dynamics people having comparable level people to ourselves at the meeting.

The vice president of the corporation, Mr. Golden, was there and a Mr. Iverson, whom I believe was the top man in the electronics division of General Dynamics.

They listened to this review of their people and heard it in the same way we did. We thought that it was rather important that they do this. They were a responsible company, and we felt that it would be the right thing to have this program review and to have

an understanding of just where the status of the radar was for both ourselves and for them.

Mr. BURTON. In other words, you didn't think they knew that they had incurred cost overruns and schedule slippages?

Mr. COCHRAN. Yes, sir, I think they knew that already. They had told us that. But we were not sure. They were still saying they could build a radar set, and they were still saying that——

Mr. BURTON. All right.

Mr. COCHRAN. So we wanted them to see what their people said in order to be able to assess the risk in the same way that we could.

We came away from that meeting—at least I did—after looking at the facilities that General Dynamics had in the Orlando area, fairly well convinced that they would have some difficulty in producing the 37 radar sets.

We were not similarly convinced concerning the antennas, because they did have an established antenna range which appeared to be coming along. They also had an electrical design of an antenna from the engineering company that had done the work for them. It looked like there was a reasonable prospect that they could make the antennas work.

We went into a meeting then and had lunch for about 30 minutes to 1 hour, I guess, with these two gentlemen and Mr. Frakes and myself.

We simply had a business discussion, as anyone would have, concerning what the prospects were and what all the alternatives were. We certainly discussed, I think, every alternative I've mentioned here with them.

We came away from that meeting—we had no power to make any commitment at that meeting.

Mr. BURTON. Did they ask for commitments?

Mr. COCHRAN. No, sir, they did not.

Mr. BURTON. What did you discuss? You said: "You guys just can't do it." What did they say?

Mr. COCHRAN. They said that they——

Mr. BURTON. In other words, you realized when you looked at the situation that there was not much of a chance that they could complete the contract.

Was their continued position that they could do it?

Mr. COCHRAN. I think that they felt with a slip in time—9 to 12 months—and a cost overrun that they could do it. They could produce the 37 radars and the 40 antennas.

Mr. STANGELAND. Mr. Chairman, may I ask just one question?

Mr. BURTON. I would be happy to yield.

Mr. STANGELAND. How much longer after this point in time did you negotiate with Texas Instruments to fulfill the contract under the same terms as General Dynamics?

Mr. COCHRAN. It wasn't too long after that.

Prior to this time, we had a contract with Texas Instruments for three ASR-7's on a sole source basis with them. That's the previous generation of radar. It was a solid state radar—a fairly good radar set. The ASR-8 is the next generation of that system.

We were under contract with them for three of these ASR-7's. They came to use with an unsolicited proposal that they convert this at no cost to us of the three ASR-7's to three ASR-8's.

We took this unsolicited proposal and converted it to a contractual modification. We were under contract with them previous to this time for the three ASR-8's, I believe.

Mr. Frakes might be able to fill in on the time there when we started on negotiations.

Mr. BURTON. I think we have that.

In other words, when they figured out that General Dynamics was not going to complete the contract, and they moved over to Texas Instruments——

Mr. BUTTERWORTH. The first proposal was made from Texas Instruments on June 13, 1974; is that correct? The contract with Texas Instruments was then signed on September 24, 1974. So sometime between that offer and September 24 that decision was made.

We have the July 17, 1974, alternative action position paper. One of its directives, I believe, was to initiate the contract with Texas Instruments. So the decision must have been made by that time. It must have been made by July 17, concurrent with the decision to modify the contract.

Mr. FRAKES. We immediately started negotiations after we restructured the contract, which was August 24. The contract with Texas Instruments was negotiated and awarded in September—I believe September 23.

Mr. STANGELAND. I guess what I want to know is when was this meeting that you held with General Dynamics?

Mr. COCHRAN. July 3.

Mr. STANGELAND. And you had negotiated, or Texas Instruments at least had come to you with a proposal in June.

What I am appalled at in all of this—and I am really appalled—is the fact that General Dynamics, you say, was a reasonable company and all you had to do was renegotiate a contract and give them 10 times what they had originally planned for, and get 1 out of 37, and you have another company that can do it, and has, and will perform.

You know big business is cutthroat among themselves, and here we have played Santa Claus. I don't understand that.

Mr. BURTON. Eloquently put.

Mr. STANGELAND. To save this company because they are reasonable and from what I see here they were totally unable to perform and unreasonable as far as a company and there was no point in trying to keep them in competitive business—in this area at least. Maybe someplace else, but not here. I just really don't understand.

Mr. BURTON. It does strike one that way, Mr. Stangeland.

Mr. STANGELAND. I'm sorry for the interruption. Mr. Chairman.

Mr. BURTON. That's perfectly all right.

I have some more questions, and then I'll yield to you gentlemen. I am like Mr. Stangeland. I honestly just don't understand it. There was a verbal offer from General Dynamics on July 10?

Mr. FRAKES. I am not aware of the verbal offer.

Mr. BURTON. Well, how did the contract get modified? Who came out and said: Here's the deal?

General Dynamics seemed to think they could have made it, except that they would have breached the contract.

You said you had a good lunch like all business people do. Unfortunately your business is the public's business and it isn't supposed to be like a corporate business luncheon. We don't know how this decision was made. We don't have any records. Not just about the lunch but about the whole process. To use Mr. Stangeland's words, we don't know how the decision was made to bail them out and give them the taxpayers' money for this.

There aren't many records floating around. There's no memorandum of a meeting that was held when you came back. There's no record of what options were discussed.

It might have been like somebody coming back from Vietnam and giving the President the "real picture." The fact that there was no way they could complete the contract, and that our option was to make them honor the contract, or maybe go for the antennas, seems sound to me.

But there's no record as to how this happened.

I think the staff is going to point out an FAA regulation that requires memorandums of meetings like that.

Mr. BUTTERWORTH. This regulation was at least in effect by March 4, 1972. It is found in 41 CFR 12-1.313, "Records of Contract Actions."

It states:

> In compliance with the requirements of Federal Procurement Regulations 1.1—313, each procurement office shall maintain for each procurement exceeding $2,500, a contract file containing comprehensive records of all preaward and postaward actions and other data. Adherence to this policy will require the assembly of either the original or the copy of all documents pertaining to the procurement in a file consisting of one or more folders. It will also require documentation for the record of all understandings, oral agreements, and any other facts or information pertinent to the transactions.

That regulation was in effect at the time of these offers.

You made a decision, and therefore offers and proposals must have been made, either in Florida between June 28 and July 3, or on July 10. At least, that's the one we know about. You apparently also had a conversation with the Administrator. There are no records of any of these events.

Mr. FRAKES. There was a proposal made by General Dynamics in which they offered three options. One was one ASR-8 loan——

Mr. BURTON. For how much?

Mr. FRAKES. I don't recall that right now. I could get that.

One was for an ASR-8 for 40 antennas. The third option was for one ASR-8——

Mr. BUTTERWORTH. Mr. Frakes, Mr. Warren Sharp of FAA stated in a letter that the decision had been made sometime between July 1 and 15, 1974. Now there must have been offers before that time or within that time period.

Mr. FRAKES. I think August 8 was the first official proposal by General Dynamics.

Mr. BURTON. That conflicts with the only piece of information we have in written language. That it was made before July 17, 1974.

Does anyone know about a July 10 verbal offer from General Dyanamics?

Mr. FRAKES. I'm not aware of that.

Mr. COCHRAN. No.
Mr. BOND. No.
Mr. WEITHONER. No.
Mr. BURTON. Who directed that the alternative action position paper on the contract modification be written and specified its contents?
Mr. FRAKES. May I ask which?
Mr. BURTON. The July 17 paper.
Mr. FRAKES. Are you referring to a memo?
Mr. BURTON. The alternative action position paper. The alternatives being determination for default, continuation of the contract—the things you set out; the five alternatives. Continued performance via subcontract. The various options.
I guess somebody asked somebody to write a paper setting forth our options.
Mr. COCHRAN. I think I did after the meeting with the Administrator or the Deputy Administrator. We went over the options, and I asked someone to write them down.
Mr. BURTON. And you asked them to summarize a verbal proposal presented to FAA on July 10.
Mr. COCHRAN. I don't recall that part of it.
Mr. BURTON. It's in a memo. I don't know if this is your memo. The signature is Mr. Lamont's.
Mr. COCHRAN. He was the technical officer.
Mr. BURTON. He must have known about it.
Did anybody talk to Mr. Beggs at this time?
Mr. COCHRAN. No, sir.
Mr. BURTON. Was he with General Dyanamics at this time or still with DOT?
Mr. COCHRAN. He was with General Dynamics at this time.
Mr. BURTON. And no one discussed it with Mr. Beggs?
Mr. FRAKES. I did not.
Mr. BURTON. I guess being the guy who recommended it, he might have been embarrassed to discuss it with anybody.
No one knows about the verbal offer.
Mr. FRAKES. Mr. Chairman, I'd like to go back and clarify the discussion about the group that worked on the alternatives.
Mr. BURTON. First, how about the July 10 verbal offer? Nobody knows about it, and it's in a memo.
Mr. FRAKES. I cannot recall it.
Mr. BURTON. All right.
You were going to explain something; go ahead.
Mr. FRAKES. When General Dynamics officially told us in May that they had a very significant cost overrun and a schedule slippage of at least 9 months, we did put a working group together, both from the program office, the contracting office, and General Counsel to discuss and come up with what were our alternatives. We needed radars, and what were our alternatives. This is when these were initially developed as the alternatives. It was prior to our going to Orlando.
Mr. BURTON. One of the alternatives was that you felt that Texas Instruments could make them and could subcontract through General Dynamics—is it against the law for a Federal agency to hold a corporation to a contract? [Laughter.]

Mr. FRAKES. No.

Mr. BURTON. That thought never entered anybody's mind, especially when you knew you could pick up the radars from Texas Instruments and probably have even saved the cost of postage on a subcontract between Texas Instruments and General Dynamics? Did that thought enter anybody's mind—just to hold them to the contract?

Mr. FRAKES. We were advised by them that there was at least a 9-month delay. They felt strongly that the contract would have to be restructured. The inference was that they would not perform and deliver 37 radars at the price in the contract.

Mr. BURTON. In that case they are in breach of contract; aren't they?

Mr. FRAKES. If they had done that.

Mr. BURTON. Right.

There isn't any Federal law that says they can't be sued for breach of contract.

Mr. FRAKES. No, sir.

Mr. BURTON. It wasn't only the 9 months schedule delay; the cost had become a lot higher too. Isn't that correct?

Mr. FRAKES. That would have been their cost. It was much higher; yes.

Mr. BURTON. Was termination ever really discussed?

You needed radars. You knew you weren't going to get them from General Dynamics. So you were just, cold turkey, bailing them out.

One of your options was to subcontract from them to Texas Instruments who could do it. That would lead me—perhaps stupidly—to think that you could contract with Texas Instruments yourself and eliminate the middleman.

Mr. FRAKES. Absolutely. We did that.

Mr. BURTON. But you did that and also gave away the money to General Dynamics, which was really just a gift of public funds.

Mr. FRAKES. At the point in time about which you are talking, Mr. Chairman, we did issue a show cause letter for default termination.

Mr. BURTON. But you backed off.

Mr. FRAKES. Yes, sir.

Mr. BURTON. Who made that decision?

Mr. WEITHONER. That was either the Administrator or the Deputy Administrator. Either Mr. Butterfield or Mr. Dow.

Mr. BURTON. And what information did they have?

Mr. WEITHONER. They had the results of the discussions that I referred to earlier.

We had gone through all these alternatives and talked pros and cons, and they had the benefit of that discussion.

Mr. BURTON. Was this information in memo form or what?

Mr. WEITHONER. The part that I sat in on was an oral discussion with about six or seven of us in the room where they went through all of these alternatives.

Then Mr. Dow, in a smaller group, met within the next day or two with the Administrator. As I understand it—I was not present—they reviewed at least several of the alternatives; and Mr. Butterfield made the decision.

Mr. STANGELAND. May I ask a question, Mr. Chairman?

Mr. BURTON. Yes.

Mr. STANGELAND. Mr. Cochran, you are the Associate Administrator for Engineering and Development?

Mr. COCHRAN. That's correct.

Mr. STANGELAND. Would it be your evaluation report that would have recommended as to which company would have been issued the initial contract?

Mr. COCHRAN. At the time we are discussing, which is back several years, I was not the Associate Administrator for Engineering and Development. I was the Director of the Airways Facilities Service, which was the technical organization that was trying to buy the radars; that is correct. I had the technical program responsibility for getting the radars out in the field.

Mr. STANGELAND. Is there any precedent, or is it customary, to take anything but the low bid in other instances when two companies bid with the Government; or is it hard and fast that you have to take the low bid?

Mr. COCHRAN. No, sir, it is not hard and fast. In fact, our recommendation to the Secretary of Transportation was to go with the high bidder.

Mr. STANGELAND. I realize that.

Mr. COCHRAN. There have been times where it has gone to someone other than the low bidder. That's correct.

Mr. STANGELAND. Now in a case like this, what expertise does the Department of Transportation have in determining which should be the bidder? Is it based solely on what you recommend, or do they do some assessment of the various companies? Do they analyze your report saying there was a higher risk going with General Dynamics than with Texas Instruments?

Mr. COCHRAN. I do not think that they made any independent assessment of that judgment. I believe that it was strictly a review of what we did, and then they decided to go the other way.

Mr. STANGELAND. Is there any appeal procedure when an agency that does technical work in a field like this and makes a recommendation and the upper agency rejects that recommendation, is there any appeal procedure so that the technical agency is listened to in these kinds of things?

Mr. WEITHONER. There is no formal procedure. The Deputy Secretary, Mr. Beggs, did allow the FAA to come back, I believe, the second time. Or at least he provided an opportunity for us to get our word in again and as thoroughly as we wanted to. We did that, and that's the meeting that Mr. Cochran referred to where he went over and spent several hours.

Might I add, sir, that the Office of the Secretary does have a technical arm. At that time, there was an Assistant Secretary for Research and Development who had people with technical backgrounds. I can't say for sure what happened in this case; but in a typical case, the proposal of the FAA would be reviewed both by the contracting people in the Office of the Secretary and the technical people. They too would provide advice to the Deputy Secretary before he made a decision.

Mr. BURTON. What was the date of the decision made by then-Administrator Butterfield on the contract modification? Do you recall that?

Mr. WEITHONER. I don't have the date itself.

Mr. BURTON. There was a big meeting the day after they came back from Florida. Then right after that, there was a small meeting?

Mr. WEITHONER. Yes. I believe it was within a few days after the return from Orlando.

Mr. BURTON. That gets us to Mr. Sharp's statement that the decision to modify the contract was taken before July 17, and so it couldn't have been taken on August 30 or around that time.

Thank you. I'm sorry, Mr. Stangeland.

Mr. STANGELAND. Then the safeguards that the FAA took as far as supervision of the program were apparently inadequate. I guess I'm somewhat puzzled, because FAA began by assuming that General Dynamics was a higher risk organization. I would have expected that there would have been a little better monitoring of what they were doing—or is that a wrong assumption?

Mr. COCHRAN. Maybe I should give you just a few bits of information that indicate to you some of the difficulty in monitoring the contract.

One of the things that caused us some problems with the General Dynamics proposal was the method in which they proposed to do work.

This company is essentially headquartered in San Diego. It had decided, because it lacked some technical expertise on its own to do the design work of a fairly complex system, that they would contract with another manufacturer for the technical design of this radar set. So they contracted with Thompson CSF, a French organization, for the technical and engineering design of the ASR-8.

They also proposed in their proposal that they would, at the point of receiving the technical design from the Thompson CSF people in Paris, translate that design into language and American manufacturing methodology—make that transition—and they would do that by transferring some of their key people from their San Diego plant to Orlando in order to carry this work out.

This allowed them to use Orlando, an area where they had a plant, for something else and also an area where they considered the labor rates to be right. They would be able to put all this together.

We spent quite a number of manhours trying to monitor that contract. It wasn't an easy contract to monitor.

It was a complicated radar; there are no two ways about it. I wouldn't minimize the complexity of the radar set. It is a complicated radar set.

We have been very demanding in the operational requirements of radar sets for a very good reason, I think. And we've had good success with radars, by the way. I don't think anybody would criticize us on that. We have good radar sets.

But it was difficult to monitor that contract, just by the nature of dispersion of the effect and by the nature of the transitioning from one juridiction to another. The language barriers involved in that transition were difficult for the manufacturer and for us.

These are part of the points that we made in originally assessing that.

But sitting here now in retrospect, we realize that we should have been even more diligent than we were.

Mr. STANGELAND. I realize that. Hindsight is 20/20.

Mr. BURTON. You were right the first time in recommending Texas Instruments.

Mr. STANGELAND. What I'm thinking now is that we should be more concerned.

I'm concerned about what happened here. I just don't understand it.

But can we figure out a way for these things not to happen? I'm sure this is only the tip of the iceberg of things that have happened in dealing with the Federal Government, and that bothers me.

Mr. COCHRAN. I'm sure it is too. And that is not the only contract that we have, of course, and it's not the only problem that we were facing at the time.

The principal thing in the minds of most of us in the agency at the time we were doing business in this ASR area was to get the radar sets and get them delivered. I don't think anybody can accuse us of not moving as aggressively as we could to develop this other source with Texas Instruments and to be ready to transition when we could. We did make that move; and, I think, we made it dramatically.

We wound up by getting the last ASR from Texas Instruments 1 month ahead of when General Dynamics was originally scheduled to deliver the radar set. So we had actually got all of those ASR-8's. They are out there; they are performing. I think that's one thing to our credit.

I also think that when you talk about competition—and I think it's necessary for us to do that, because that contract for 37 radars that we went to Texas Instruments with is now at 63 and we're considering 22 additional, between the time we finished that contract and 1985, we are projecting a need for 125 radars.

So when you say there is no requirement for competition, then you're——

Mr. BURTON. Nobody said that. We just said we didn't think it was the FAA's job to give out $10 million grants.

Mr. STANGELAND. To guarantee competition with a company that couldn't perform. That's the point I want to make.

Let me ask you another question.

Why couldn't Westinghouse, GE, Raytheon, and the others bid on the ASR-8's? Or did they bid on the ASR-8's?

Mr. COCHRAN. No; they didn't.

We solicited 62 or 63 firms. I don't remember the exact number. It wound up with only two bidding on it.

Mr. STANGELAND. I'm not sure that this matters, but was there anything in General Dynamics' proposal, or were you aware, that they didn't have the technical expertise and the technical design and had to farm that out? Or is that a customary procedure?

Mr. COCHRAN. It is customary to allow people to subcontract. Almost every manufacturer subcontracts some aspect of his work—almost every one of them. In fact, very few of them manufacture large portions of it.

We had had radars built by others in the past. I'm not sure, but I would venture to say, that the other manufacturers of radars have hired consulting firms and other firms to do part of the design work in some of the critical areas. So it is not totally unusual for this to happen.

Mr. STANGELAND. Do you know whether or not Texas Instruments has the technical design expertise to do their own, or do they farm it out?

Mr. COCHRAN. Yes, sir. They have it; because, as I said, they did the ASR-4, 5, 6, and 7 sets, which are just progressions of the radar sets. The ASR-8 was another progression of that.

Mr. STANGELAND. What kind of procedure would you recommend that we need to give the technical agency, such as yourself, the appeal provision when you are overruled on a recommendation for a contract? Do you have anything in mind for that?

It seems to me that the system has to be changed somehow.

Mr. WEITHONER. There are a number of things that we have done, or we are recommending.

One, we have proposed to the Office of the Secretary that they consider delegating to the FAA Administrator, Mr. Bond, what we call the source selection authority, that is, the final responsibility for determining which contractor ought to be selected to perform the contract.

Another thing that was raised just a moment ago, on monitoring: We have greatly strengthened and improved our top level monitoring of contracts such as this one. For example, Mr. Frakes and Mr. Sharp, on major contracts, now make regular program review visits to the site to talk with the contractor people and to review how they're coming along and to point out the problems that we anticipate and to discuss how they're going to be resolved. Those things have all been developed and greatly strengthened since the time of these critical decisions.

Mr. STANGELAND. I have a couple more questions.

Do you know what the economic impact on General Dynamics would have been had they been forced to perform or default that contract?

Mr. BOND. Mr. Stangeland, I might just add one thing.

We have discussed with the Secretary the delegation of this final decisionmaking authority to the FAA Administrator. It does not now exist.

I don't know that in the long run, over the large number of decisions of this kind, that my decision or my predecessor's decision would necessarily be any better than that of the Secretary's Office. Jim Beggs, for example, is an electronics expert. I am not.

With the benefit of hindsight, Mr. Chairman, apparently he was wrong.

Mr. STANGELAND. Maybe commonsense would do better than anthing else.

Mr. BURTON. I would much rather he be working for Texas Instruments than the other people.

Mr. BOND. I'm sorry; I didn't get that.

Mr. BURTON. It's just a little of my whimsy, but I would just as soon he was working for Texas Instruments instead of for General Dynamics.

Mr. BOND. I don't know. Perhaps he could explain that.

Mr. BURTON. That thought has crossed some people's minds.

Mr. BOND. I've been told that it is quite infrequent that our proposals to the Secretary's Office are overruled. In memory, on only two occasions has that happened. Both of those occasions, Mr. Chairman, are subject to this hearing today. There have been no instances we can recall, since the ARSA-3 and the ASR-8 decisions, where the FAA's recommendation was overturned.

The point is that I don't believe it's a burden or that the present system seems to be turning up any wrong decisions.

Mr. STANGELAND. Based on those bid summaries, or whatever you call them, what was the problem with that June 1972 bid? You evidently recommended that one.

Mr. COCHRAN. Yes, sir. We recommended an award of those sets to Texas Instruments at that time. It was turned down because at that time we only had the one technically responsive manufacturer. That was Texas Instruments. General Dynamics, although we had a price from them, we considered their proposal at that time to be technically unresponsive to the proposal. We were told that we needed price competition and to go back and negotiate with them into a competitive range in a technical sense.

Mr. STANGELAND. DOT told you that?

Mr. COCHRAN. Yes, sir.

Mr. STANGELAND. It looks to me like the wrong company was low, and so we just rejected it until we got it juggled around until the right company was low.

I'm not accusing you, sir, but I just wanted some clarification. The whole thing smells.

Thank you, Mr. Chairman.

Mr. BURTON. I have just a couple questions, and then I'll yield to Mr. English.

The alternatives are listed in the alternative action position paper. The paper lists courses of action and advantages and disadvantages listed for each course. They are: determination to continue performance with subcontractor; to be able to breach the contract in the national interest; or to obtain the prototype with 40 antennas and terminate for mutual convenience, balance of equipment, and procure the rest of the antennas from Texas Instruments.

There is no disadvantage stated for that alternative. In fact, in our copy there isn't even an advantage.

Who came up with the $12.8 million figure? Let's assume you wanted to buy out. Who said that it was worth $12.8 million, or whatever?

The decision was certainly made. There was an oral offer from General Dyanamics that no one at the witness table knows about. The proposal is mentioned in a memo signed by Mr. Lamont, that also talks about the program in Orlando. Does anybody know if Mr. Beggs talked to Mr. Butterfield? In other words, were any of you at the meetings where it was decided?

Mr. FRAKES. Mr. Chairman, if I understand your question, it is, where did the $12.8 million figure come from? That was a number proposed by General Dynamics as their cost to furnish the one

prototype radar and the 40 antennas, to complete it from that date forward—the total dollar value.

Mr. BURTON. Was that cost figure known for that option that was chosen of the five options laid out?

Mr. FRAKES. I believe it was, sir.

Mr. COCHRAN. I believe it was.

Mr. BURTON. Were either of you at the meeting with Mr. Dow and Mr. Butterfield where the decision was honestly made, of which there seems to be no record anywhere?

Mr. FRAKES. I was at the meeting when Mr. Butterfield made the decision to go with one radar and one antenna.

Mr. BURTON. For $12.8 million? He knew that it was $12.8 million?

Mr. FRAKES. He knew that. That was the ceiling price.

Mr. BURTON. Was it just quiet meditation and then a signature? Were there any reasons given?

Mr. FRAKES. I'm not sure I understand your question.

Mr. BURTON. Was there any explanation or discussion?

In the future, maybe all meetings like this will conform to regulation and have memorandums and records so that historians, operating out of trivial interest, may know what happened.

What was the discussion? What information was presented to Mr. Butterfield? The document that listed the five alternatives? Or was it down to one alternative when it came to him?

Mr. COCHRAN. As I recall the meeting, I think he heard all of the discussions and fairly well knew what the pros and cons of all the discussions were insofar as we knew them. They haven't changed an awful lot, except that we did expect them to perform and they haven't. So that has changed. But at that time we had representations from the company that they were going to perform.

Mr. BURTON. Even if they performed, it's an outrage. The fact that they didn't is almost incidental. It makes it worse. $12.8 million is a pretty big price.

Were you people just there giving options, or did you make recommendations as to what you thought should be done?

Mr. COCHRAN. I don't think we had any discussion with the Administrator. We heared the Deputy Administrator explaining the options and explaining the propositions. I don't recall that——

Mr. BURTON. Did he make a recommendation?

Mr. COCHRAN. Yes, sir.

Mr. BURTON. The Deputy Administrator, Mr. Dow?

Mr. COCHRAN. Yes, sir.

Mr. BURTON. He recommended and then—Administrator Butterfield accepted?

Mr. COCHRAN. Yes, sir.

I think he explained what the other options were.

Mr. BURTON. He didn't give any reason why he recommended this?

Mr. FRAKES. His main consideration was——

Mr. BURTON. Was to keep General Dynamics competitive?

Mr. FRAKES. Yes, sir. It was very important.

Mr. BURTON. Absolutely. They are very competitive in this market.

Mr. WEITHONER. With regard to the earlier meeting, the one at which I was present, I think it's fair to tell you, sir, that neither Mr. Frakes nor Mr. Cochran recommended the course of action that was taken. They gave the pros and cons, as best I recall the meeting, and all the options. They, in fact, recommended the option of trying to procure the 40 antennas and not buying the single radar.

Mr. BURTON. I appreciate that.

Here's the problem we have had in preparing for the hearing. We don't know anything. Mr. Cochran and Mr. Frakes are down in Florida and there is no record of their meetings with General Dynamics officials. There is some verbal offer by General Dynamics and yet there is no record. There are meetings, and yet there is no record. There are sweetheart deals made, and we don't know the facts until they are brought out today.

We started the hearing with whatever information could be gathered by Mr. Rider, and we've gotten a little more information today than Mr. Rider was able to get in his interviews.

This decision is just beyond my imagination—I cannot understand how he did it.

Mr. English?

Mr. ENGLISH. Thank you very much, Mr. Chairman.

Mr. Bond, I wonder, for the record, if you would have each of the gentlemen who have accompanied you identify themselves and tell us when they came with the FAA, as well as who they were employed by before they came with the FAA.

Mr. BOND. I will start with myself.

I am Langhorne Bond. I am the Administrator of the FAA. May 4 is my date with the FAA. I was an employee of the State of Illinois as secretary of transportation before that time, and for 4 years previous to that as well.

Mr. WEITHONER. I am Gene Weithoner, the Associate Administrator for Administration. I have been with the FAA, this tour, for about 5 years—not all that time in the same position I am now in. I was the Deputy for awhile. Before that, I was in the Office of the Secretary for about 5 years in various positions. Before that, I was in the FAA in a personnel position and before that, with the U.S. Civil Service Commission.

Mr. COCHRAN. I am Jefferson Cochran. I came to work for the FAA on June 6, 1948, I think 3 days after I got out of college. My entire career has been with the FAA. I was in the Army in World War II, and I then came to work for the CAA, in those days. I have worked as an engineer and technician in progressively responsible positions since that time. I have served quite a number of Administrators.

Mr. FRAKES. I am Richard Frakes. I came with the predecessor organization, CAA, in 1949. I have been with the FAA up to today—28 years. I have worked in the field for about 7 years. I came to Washington in 1957. I have been in various organizational elements. I am an engineer by training. I have been in my present job since June of 1974. I was Acting Director from January to June. Prior to that, I was Deputy Director for 3 months.

Mr. SHARP. I am Warren Sharp. I am currently Director of Airways Facilities Service. I have been in the employ of the CAA/

FAA since November 1947. I was Deputy Director of Airways Facilities Service at the time of occurrence of the events we are talking about—the 1971 to 1974 timeframe.

Mr. ENGLISH. Mr. Bond, with the exception of yourself, it appears that you are the newcomer to the group. All of you gentlemen were with the FAA during the time that the events we're discussing here transpired. Is that correct? [All indicate yes.]

Mr. Bond, in looking at your testimony, I was struck by one statement in particular. You point out that there is a comprehensive overhaul of the acquisition management process which I would assume would be an admission, by the FAA at least, that things were not as they should have been with regard to procurement; is that correct?

In other words, what I'm saying is that there were some serious problems with the procurement process as it existed before the recognition was made and this plan was undertaken.

Mr. BOND. I think the answer to that is that it could have been done in a more systematic way, especially with regard to record-keeping, as the testimony here has indicated.

I would like to take credit for it, but I must say that it was initiated before I came here and I am happy to carry it on.

Mr. ENGLISH. I would certainly agree with you, given the five studies that were taking place—I would assume they were a result of that. I might say that I believe this subcommittee can take some credit for sparking those views by some outside groups.

We have had several hearings by this subcommittee over the past couple of years, both by the current chairman and by the previous chairman, into some difficulties with the FAA.

If you will remember, earlier this year when you came before this committee, we had some discussions with regard to a training simulator that was to go to Oklahoma City. You indicated at that time that you would look into this matter and see what you could determine about it. Have you, in fact, looked into it?

Mr. BOND. I have. It was one of the subjects that was to be discussed at the hearing today.

I did touch on it in my prepared statement.

The current circumstances are that we are evaluating proposals for it, and we anticipate an award for the simulators themselves in January or February of 1978. We think we will make that target date.

As I mentioned in my testimony before the committee, the ground is already broken on the building for that facility in Oklahoma City.

Mr. ENGLISH. Earlier we asked GAO with regard to who the contracting officer was during the period from 1971 through 1974; can you give us that information?

Mr. WEITHONER. I can't name an individual contracting officer. Mr. Chestnut possibly could.

Mr. CHESTNUT. James E. Chestnut, Chief, Contracts Division, FAA. There was a series of contracting officers.

Mr. ENGLISH. How many contracting officers would you suspect were in office during that period? You're talking basically about a 3-year period.

Mr. CHESTNUT. Are you talking about simulator procurement itself?

Mr. ENGLISH. That would be one. I am interested, as well, in the other two procurements.

Mr. COCHRAN. You mean the man in charge of procurement totally; the man who had Mr. Frakes' job prior to that?

Mr. ENGLISH. I would suspect that would be true. I'm looking for the man who made the decision to make the purchases. That's the man I'm looking for.

Mr. COCHRAN. That was Mr. Paul Comulada who had that job prior to this time.

Mr. ENGLISH. Through that entire period of 1971 through 1974?

Mr. WEITHONER. He would have been the Director of the Logistics Service. That means he supervises all the contracting officers of the Procurement Division. It does not mean that he would necessarily have made the decision to buy or not to buy on a particular piece of equipment. He was in charge of the contracting activity within the FAA.

Mr. ENGLISH. Was he in charge of the procedures that were set forth?

Mr. WEITHONER. Generally speaking, yes, sir.

Mr. ENGLISH. He was the one responsible then for carrying out those procedures or making sure that they were carried out—let me put it that way.

Mr. WEITHONER. They were carried out in his office; yes, sir. There were some things——

Mr. BURTON. He had the responsibility for running that office; right?

Mr. WEITHONER. For running the contracting office.

Mr. ENGLISH. And this was for the entire period of 1971 through 1974?

Mr. WEITHONER. 1971 through late 1973, I believe.

Mr. ENGLISH. Can you tell us where he is at the present time?

Mr. WEITHONER. He is retired, and I don't know where.

Mr. ENGLISH. I was struck, Mr. Bond, by your testimony with regard to the training simulators, that on two occasions the FAA unsuccessfully attempted to acquire modern simulation capability for use in training air traffic controllers. Could you give us the two instances that you were referring to?

Mr. BOND. I was referring to the arrangement with Sylvania. That would be the first.

Mr. ENGLISH. Would you care to elaborate on that one on the events that took place?

Mr. BOND. Perhaps I could get Mr. Weithoner to do that.

Mr. WEITHONER. I wasn't there at the time, but I know the general history. This was about 1971 or 1972. There was a contract signed with Sylvania to produce a number of simulators. I believe the total value of the contract was on the order of $5 million. I believe the contract called for the development of a prototype, or a first model.

Sylvania got started on that one. They spent about $1 million and were into it something on the order of 6 months to a year. Then they came to the FAA with the idea that to produce the first

one was going to cost substantially more money and take more time than they had earlier anticipated.

The FAA reviewed the circumstances and decided to terminate that contract. So we spent about $1 million of the $5 million that was originally projected.

Mr. ENGLISH. Isn't it a fact, with regard to that, that you received—let me ask this question. Did you receive anything in return for that $1 million or $1.5 million?

Mr. WEITHONER. Nothing substantial. I believe they got some pieces of equipment or things like that which were delivered to the academy. But there was no simulator delivered.

Mr. ENGLISH. And during this period, basically from June 30, 1972, to February 14, 1973, Sylvania took $1.5 million of the taxpayers' money; and the Government got nothing in return; is that correct?

Mr. WEITHONER. I think we got nothing substantial; yes, sir.

Mr. ENGLISH. You didn't get $1 million worth?

Mr. WEITHONER. No, sir.

Mr. BURTON. It depends on the price of scrap.

Mr. ENGLISH. Would you care to elaborate on the second instance?

Mr. WEITHONER. We then started, in 1973, with an attempt to procure simulation capability. At that time we looked around and made a survey of the market. We went out and looked at a number of firms to see if they had simulators that were in existence, or close to it, that could meet FAA purposes rather quickly.

We ended up, after surveying some 15 or so firms, entering into negotiations with the Space Research Corp. Those negotiations extended from roughly July to November or December 1973. At the end of that, as I'm sure you know, we did not enter into a contract.

Mr. ENGLISH. Did Space Research Corp. submit a bid at the time that the contract was awarded to Sylvania?

Mr. WEITHONER. I don't know that, sir; I would have to check it.

Mr. ENGLISH. I can tell you that they did not.

Are you familiar with how Space Research Corp. got involved in 1973—in fact, the period between February 14, 1973, and July 18, 1973?

Mr. WEITHONER. I may be wrong, sir, but I believe that in the spring they submitted an unsolicited proposal to the FAA—that would be February or March of 1973.

Mr. ENGLISH. I beg your pardon, but I believe the FAA went to Space Research Corp. in the spring of 1973.

Mr. WEITHONER. OK.

Mr. ENGLISH. The reason they went to Space Research Corp. in the spring of 1973 was because Space Research Corp. was already in their third phase of simulators. In fact, they already had simulators in place in Canada as well as other countries abroad.

Mr. WEITHONER. I know they did have simulators operating in at least several places; yes, sir.

Mr. ENGLISH. I wonder why Space Research, since they already had simulators in place and being used by the countries, when the FAA put this thing up for bid for the first time and Sylvania got it, I wonder why they didn't submit a bid.

Mr. WEITHONER. I have no idea, sir.

Mr. ENGLISH. Did any of you other gentlemen involved have any discussions with Space Research, or are you familiar with the facts on that?

Mr. WEITHONER. I don't believe there's anyone here who was involved in that procurement back in 1971 and 1972.

Mr. ENGLISH. I can tell you from my discussions with Space Research why they didn't do it. It was basically because FAA had the reputation throughout the electronics industry that it deals only with major companies. And even though Space Research Corp. does do a great deal of work with the Department of Defense, they felt that it wasn't worth their time and effort to submit a bid.

In the spring of 1973, after Sylvania defaulted on this particular contract, in less than a 12-month period of time they took the Government for over $1 million of the taxpayers' money. They provided absolutely nothing in return, with the exception of a few nuts and bolts. FAA went to Space Research Corp. and asked them to submit a bid. Once again, they put up the very same specifications that they put the bid out for the first time.

Does that track with what you remember of the situation?

Mr. WEITHONER. I wasn't there, but it generally tracks with my understanding of what happened; yes, sir. I thought that we had received an unsolicited proposal, but I wouldn't deny that we might have made contact with them.

Mr. ENGLISH. In fact, back in 1973, on September 21, in a letter to John McFall with the Appropriations Committee, the FAA stated that the same specifications were offered to Space Research Corp. that GTE-Sylvania said they could not meet. This company said, in fact, that they could meet the specifications with very little difficulty—and, in fact, meet them by the end of 1973 and have the first simulator on its way to the training center in Oklahoma City at that time. Are you familiar with that?

Mr. WEITHONER. Generally speaking, yes, sir.

Mr. ENGLISH. Are you also familiar with the requirements and the device that was produced by Space Research Corp.?

Mr. WEITHONER. In a very general sense. I have never seen it; I am not an expert in that field. But I know they had a simulator.

Mr. ENGLISH. Have you talked to the people who are familiar with it?

Mr. WEITHONER. Yes, sir.

Mr. ENGLISH. And what were their observations?

Mr. WEITHONER. At the time—this is back in the summer of 1973—at least some of the people that I talked to felt that they had a simulator that would meet FAA requirements and that we should go ahead and buy it. That, of course, is why we went into the sole source negotiation with them.

Mr. ENGLISH. So in September 1973, FAA technicians were satisfied with the progress being made on the simulator being developed by Space Research; is that correct?

Mr. WEITHONER. I think they felt generally that Space Research either had or could develop fairly quickly something that would meet our requirements.

Mr. ENGLISH. Could you identify Mr. William Flener?

Mr. WEITHONER. He's the Associate Administrator for Air Traffic and Airways Facilities.

Mr. ENGLISH. In a question back on April 7, 1976, I asked Mr. Flener that very question with regard to a letter that he had written.

Basically, here is my question. This was a series of questions:

Let's throw out the letter to SRC and take specificially your statements of June 29. Evidently you felt strongly about the SRC simulator if you were willing to say it meets all the requirements. That is what you said.

Mr. Flener responds:

Yes. That device met all the requirements. I feel the same way today.

Do you differ with Mr. Flener's statement?

Mr. WEITHONER. In this respect, I would, sir, if I remember and understand the situation correctly.

Was that letter you just referred to 1976?

Mr. ENGLISH. This was hearings before this committee on April 7, 1976.

Mr. WEITHONER. But the letter that you quoted.

Mr. ENGLISH. The letter is immaterial; it doesn't matter. Basically I was saying: "Throw out the letter. Forget about the letter." I'm saying that:

Evidently you felt strongly about the SRC simulator if you were willing to say it meets all the requirements. That is what you said.

Mr. Flener responds:

Yes. That device met all the requirements. I feel the same way today.

That was a year ago. Mr. Flener said he still felt that that simulator met all the requirements that FAA had.

Mr. WEITHONER. I guess I would differ with him at least in this respect, sir.

At that time, I believe there was a discussion of purchasing one simulator. That was what SRC—I don't understand. I would like to read the correspondence and see what it is that Bill was responding to and what he said.

Mr. ENGLISH. Basically, we're talking about a simulator. The first one was to be delivered the first of January of 1974. That was the schedule that was set up.

So basically, you had a situation where the FAA went to SRC. They said: We need a simulator; can you meet these requirements?

GTE-Sylvania had just bitten off $1 million and said the thing couldn't be built, even though this company had them in operation throughout part of the world.

SRC said they could do it. FAA went ahead and put out the bids, and SRC met it and started building a simulator—basically running from July 18, 1973, to a deadline for delivering the first one the first of January 1974. That was basically less than 6 months they were going to build one and have it in Oklahoma City and ready to go; isn't that correct?

Mr. WEITHONER. Not quite, sir. I think that the contract would have called for delivery perhaps 4 or 6 months after the contract was awarded. It couldn't have been January of 1974; it would have had to have been after the contract was awarded.

Mr. ENGLISH. Again, that's where we get into the question of litigation as I understand it—as to whether or not a contract was let. Isn't that correct?

Mr. WEITHONER. Our position, as you know——

Mr. ENGLISH. I know what your position is, but the court hadn't decided on that. At least I, as one member of this committee, may differ with you on that, being familiar with the developments and the letters that were written on it.

But it's my understanding at least that Space Research Corp. had it in their heads that they were going to deliver the first one to Oklahoma City in the first part of January of 1974. You had an awful lot of people from FAA that were crawling all over them up there through the latter part of 1973 as to the requirements for producing such a simulator.

It appeared to me that Space Research, at least, was convinced that they had a contract; because they were doing everything they could to comply with it. At the same time, they were building one of them. They weren't planning on keeping it around up in Vermont. It was supposed to go to Oklahoma City the first part of January.

Mr. WEITHONER. I'm sure they expected to get a contract.

Mr. ENGLISH. All right.

Then we get down to December 1, 1973. Here we have Mr. Flener, as he stated in 1976: "This device has met all the requirements of a training simulator."

In fact, he feels the same way today. In 1976, he still felt the same way—2 years after everything was canceled.

So on December 1, the thing was canceled.

Mr. WEITHONER. I don't believe that's the correct date, sir. It was in December of 1973 or January of 1974, but I don't think——

Mr. ENGLISH. It was in December. The dates that we have from the testimony we had before is that it was early December.

Mr. WEITHONER. I would have to check.

Mr. ENGLISH. That's when the meeting was held.

If you could check and find out, I would appreciate it; because the last time we had a little go-around with FAA on this, they couldn't even tell us who was at the meeting.

Mr. SMITH. Excuse me. There was a meeting on December 17 where SRC was informed by the contracting officer that their conclusion of negotiations did not indicate necessarily that there would be a contract.

Mr. ENGLISH. The letter, as I understand it, was dated January 30, 1974. And I've seen the letter.

Mr. SMITH. There was a meeting on December 17, and SRC's own internal documents bear that out.

Mr. ENGLISH. Were SRC representatives there at that meeting?

Mr. SMITH. Yes.

Mr. ENGLISH. They attended that meeting?

Mr. SMITH. That's right. The meeting with SRC.

Mr. ENGLISH. That's very good. Mr. Flener said he was there at that meeting. Wasn't he there?

Mr. SMITH. No. This was a meeting having to do with the——

Mr. BURTON. Could you come up and identify yourself for the record?

Mr. SMITH. My name is Richard Smith. I am the Assistant Chief Counsel for Procurement at FAA.

Mr. BURTON. Have you been sworn?

Mr. SMITH. Yes; I have.

Mr. ENGLISH. Are you saying then that Mr. Flener was not at this meeting?

Mr. SMITH. I'm not really sure of the meeting you're talking about.

Mr. ENGLISH. We're talking about December 17. You're the one that gave us the date.

Mr. SMITH. There was a meeting on December 17. That was with SRC. It had to do with the conclusion or wrapup of negotiations with them.

Mr. ENGLISH. Are you saying then that they were notified at that time that FAA was not going to purchase simulators from them?

Mr. SMITH. They were notified—and I think I even have the language—

The successful completion of our negotiations does not mean that there will be a contract. Because of the energy crisis, the FAA is studying the impact of the crisis on all FAA programs to determine a posture.

Mr. ENGLISH. OK, that's fine.

So the meeting, as I said, took place in early December. What you're saying here is that this was the meeting with SRC when they finally notified them whenever FAA started——

Mr. SMITH. Previous to that a preaward survey team had gone to Space Research one more time to look at some technical and financial questions that were still continuing.

Mr. ENGLISH. Right. One month before delivery.

Mr. SMITH. But there was no contracting officer present at that meeting.

Mr. ENGLISH. Like I said, we get into this question of contracts. I don't want to get into the question of the legality of it since it is in court. But I'm not sure if I were going to come out publicly, that I would come down on your side. I think you have a pretty good idea of which way I would come down.

The point is that the first part of December a meeting was held. The decision was made that FAA, for some reason, would not now purchase these training simulators.

Mr. SMITH. The meeting that Mr. Weithoner attended.

Mr. ENGLISH. That's the one we're talking about. That's the one we're having trouble finding out who made the decision. Nobody made the decision at that meeting, but all of a sudden we had to materialize out of it a decision. Someone, by osmosis, told everybody at the meeting: We're going to decide against carrying out this contract.

Mr. WEITHONER. I believe that meeting was in late December. My memory may fail me, but I think it was around the 29th or 30th.

Mr. ENGLISH. I think we can pull the testimony of Mr. Flener. He told us it was early December.

Mr. WEITHONER. If we're talking about the same meeting, I think Mr. Flener was not present at the meeting I'm talking about.

Mr. ENGLISH. I'm talking about the early meeting. I'm talking about the meeting where only FAA people were there. I'm talking about the meeting where no records were kept. That's the meeting I'm talking about, and Mr. Flener says he was there. That's when he says the decision was made.

Mr. BURTON. You really ought to keep records of those meetings. [Laughter.]

It leads us to believe the worst if we can't prove anything else.

Mr. ENGLISH. Basically, the information that you're putting forth about what took place in the meeting with SRC in the middle part of December of 1973, in which you started getting worried about the energy crunch—with the energy crunch we weren't going to have any airplanes flying and so we didn't need to train any air traffic controllers—wasn't that the gist of the whole thing? Wasn't that the gist of a letter that was written, in fact, informing the people at Space Research in January that you would not be accepting the training simulator? The one that was sitting on the loading docks in Vermont waiting to be shipped.

Mr. WEITHONER. I wouldn't state it quite that way.

It seems to me that in the meeting I attended, which I think was the next to the last meeting before a final decision was made which was in late December, the energy crisis was one of the reasons that was discussed at that meeting as one of the things to consider before you decided whether to go ahead with the SRC contract or not.

As a matter of fact, I don't believe it was on the dock ready to be shipped as recently as 1976.

Mr. ENGLISH. Who was the Administrator in December of 1973?

Mr. WEITHONER. That would have been Mr. Butterfield.

Mr. ENGLISH. Where is Mr. Butterfield employed right now?

Mr. WEITHONER. He's on the west coast working in the private sector, but I——

Mr. ENGLISH. For what company?

Mr. WEITHONER. I don't know.

Mr. ENGLISH. Isn't it Raytheon?

Mr. WEITHONER. No, sir. He was not involved with Raytheon the last time I knew.

Mr. ENGLISH. He is not with an electronics company? Was he not employed by an electronics company whenever he left the FAA?

Mr. COCHRAN. He consulted for a number of companies, but I don't believe he——

Mr. ENGLISH. Consultant means he is hired on. He's getting paid. That's the same thing. It may be a fancy name to say he's a consultant, but he has hired on.

Mr. WEITHONER. I heard him say on television that he was unemployed. That was a substantial period of time after he left the FAA.

Mr. ENGLISH. It is my understanding that he was employed by an electronics company—whether as a consultant or what I don't know. Whether he was drawing hourly wages or drawing a monthly check I don't know.

Were you, or are you, aware of a contract that was supposedly made—at least charged by Space Research Corp. shortly after the discussions with the FAA in the spring of 1973 by Raytheon Co.?

Mr. WEITHONER. No, sir. I don't remember anything that I can tie in with——

Mr. ENGLISH. You heard no story about that?

Mr. WEITHONER. Contacts between whom? I'm not sure I understand.

Mr. ENGLISH. By Raytheon officials contacting Space Research Corp.

Mr. WEITHONER. No, sir.

Mr. ENGLISH. You're not aware of that?

Mr. WEITHONER. No, sir.

Mr. ENGLISH. Are any of you gentlemen aware of that?

Mr. COCHRAN. No.

Mr. FRAKES. No.

Mr. ENGLISH. You heard no story like that at all?

Basically, as I understand the story, and, again, I would say this was told to me by Space Research Corp., they were contacted by officials of Raytheon. The Raytheon officials told them in effect to either subcontract this through us or you're not going to get your contract completed.

Mr. WEITHONER. I can't comment on that. I never heard of the meeting.

Mr. ENGLISH. It wasn't a meeting; it was a telephone conversation.

Mr. WEITHONER. I have no knowledge.

Mr. ENGLISH. Supposedly—and, like I said, this is coming from Space Research Corp.—Space Research Corp. turned them down. That's the reason they feel that when it came time to ship that training simulator out, it didn't go anyplace.

Mr. WEITHONER. I don't think they had a simulator ready to ship out, Mr. English. Maybe it's a moot point. But as recently as 1976, when Dr. McLucas who was then the FAA Administrator, was looking into the procurement of the one simulator that they had finished, Dr. McLucas named a special team to go up to Troy where the plant is to take a look at that one simulator. I did not make that trip. As I understand it, the simulator was not operating when they were up there; it would not perform.

Mr. ENGLISH. I know when I was up there, and I believe that this was February of 1975 if I remember correctly. I went to North Troy, Vt., to Space Research Corp., and I saw the training simulator then. In fact, Canadian teams came down and showed us how to operate it and what it did and explained to us exactly how the procedure and the process was working for them.

Mr. WEITHONER. I'm sure they may well have had one operating. All I know is that when our team went up there in 1976, it did not operate on the day that they were there.

Mr. ENGLISH. I see. It operated on the day I was there, and I was there a year earlier.

Mr. WEITHONER. I don't know, sir.

Mr. BURTON. May I ask one question?

Mr. ENGLISH. Sure.

Mr. BURTON. How many controllers could be trained with one simulator?

Mr. WEITHONER. I don't know how many.

Mr. BURTON. What was the cost of the simulator? Was it $5 million for all 28?

Mr. WEITHONER. I believe it was a little higher than that, but that's somewhere in the ball park.

Mr. BURTON. All right.

Within two recent fiscal years, you blew about $25 million in air traffic controller attrition. Conceivably, if you had had simulator training, maybe a little better screening, and had kept a better track record of them, you could have saved enough money by decreased attrition alone to pay for simulators.

Mr. WEITHONER. There would be some saving, no doubt, if we had a simulator to be used in initial screening. As you and Mr. English know, we have started a program—almost 2 years ago in Oklahoma City.

Mr. BURTON. That was right after you had the back-to-back $12 and $13 million annual loss?

Mr. WEITHONER. I don't know about the $12 and $13 million loss.

Mr. BURTON. That was money lost because people we spent money on to train to become air traffic controllers were not competent to do the job. Some probably left for other reasons.

Mr. WEITHONER. We had a fairly high attrition rate.

Mr. BURTON. Yes, which meant that amount of money wasted during 2 recent fiscal years. That's why I'm wondering if at the same time——

Mr. ENGLISH. The chairman, I think, has made an extremely important point with regard to the losses. The difficulty that I have with this entire question comes down to this issue—not only of money but of losses because of the 35- to 40-percent washout rate that we have all the way through the program that could be saved because of these training simulators.

As I understand it, at the present time, we don't even know if these people can read radar until they get through the school and go back to the place they are going to be stationed. This, to me, seems senseless.

Mr. Flener says in his testimony in 1976 that this "simulator meets all the criteria put forth by the FAA."

For some mysterious reason, I have an extremely difficult time believing that Space Research Corp. is going to go ahead and build you a training simulator out of the goodness of their hearts, hoping that in December after the thing is put together that you people are going to buy it. That's certainly in contrast—as the chairman commonly refers to it—to the sweetheart deals that we've seen elsewhere in this industry. It just doesn't fit.

What it comes down to are the lives of the people who fly in aircraft. It's not just the loss of money but the lives and knowing that the air traffic controllers could do a far better job if they were trained on radar simulators.

Mr. BURTON. It would also save money.

Mr. ENGLISH. Instead of coming back and trying to do OJT. And that's basically what they're doing. Would you disagree with that?

Mr. WEITHONER. I would disagree with the total impact of your statement.

Could I add a couple things to it?

Mr. ENGLISH. Sure.

Mr. WEITHONER. Starting 2 years ago, as you know, we started a new training program in Oklahoma City. We do not have simulators. I make no issue over that. We could do a better job if we had simulation capability. I don't think anyone would deny that.

Mr. BURTON. Do you think you could rest on your attrition rate too?

Mr. WEITHONER. I'm not sure, but I can tell you the results so far. Of the people who have completed the training we now have at Oklahoma City, our washout rate or failure rate in the academy without simulation is about 21 percent. It goes up and down depending on what class you have and things like that.

I think the big bulk of the attrition from people who are not able to do that controller job we are now capturing in the first 16 weeks of their initial training. When we add simulators, there will be some additional people who are not able to cut the simulation training; and they'll be——

Mr. BURTON. The earlier you cut them, the more you save; right?

Mr. WEITHONER. Yes, sir. We want to be responsible about it. We don't want to cut people about whom there's a probability that they would succeed. But right now we are washing out about 21 percent. Of course, you never know until those people have progressed through the system and get into the full developmental position.

We believe that the great bulk of those people will become qualified and good journeyman air traffic controllers.

Mr. ENGLISH. Isn't it a fact that up until this new program you were mentioning was first instituted that you didn't even have a pass-fail system?

Mr. WEITHONER. We did not.

Mr. ENGLISH. If an individual could stay awake down there in that classroom, he was going to pass no matter what he learned?

Mr. WEITHONER. Up until about 1969, we had a pass-fail system.

Mr. ENGLISH. I believe we had testimony before this committee back in 1976 that there was no pass-fail system and had not been one for several years.

Mr. WEITHONER. That's what I was about to say, sir.

Up until about 1969, we had a pass-fail system. About 1969 or 1970, they dropped it. So we did go to the training program, which was accomplished, in part, at the local facilities and, in part, some of the trainees went to Oklahoma City. You are correct. Essentially no one failed in Oklahoma City until about 2 years ago when we started the new training program.

Mr. ENGLISH. Isn't it true that until that person actually graduated from the school and was sent back to his station, you didn't even know whether he could read the radar or not?

Mr. WEITHONER. I think that's probably true. I couldn't say——

Mr. ENGLISH. Isn't it also true that some people simply do not have the capability to read radar, regardless of their training?

Mr. WEITHONER. That's my understanding, yes, sir.

Mr. ENGLISH. Isn't this part of the washout rate that you get into?

Mr. WEITHONER. It's a part of it. We won't know what——

Mr. BURTON. Excuse me, but this gets right back to what Mr. English was saying.

You get them all the way through the training period, and then you find out that they can't read radar. As I said, within 2 years that amounted to about $25 million. I don't know how many simulators that money could procure.

Mr. WEITHONER. I believe in the last 2 years, we have identified the great majority of those people who can't do the job of air traffic controller.

Mr. BURTON. You're doing it earlier now.

Mr. WEITHONER. Yes, sir.

Mr. BURTON. What was the loss? I think it was only $8 million recently, or something like that.

Mr. WEITHONER. I'm not sure of that number.

Mr. BURTON. That still seems like a lot of money. You ought to be able to find out sooner.

Mr. WEITHONER. You don't really know until you get it. We are washing out about 21 percent now, and I think that's going to be the bulk of the people who don't have the basic capabilities. When we add simulation, we'll be able to do a better job. But what the percentage will be I don't think anybody could tell you.

Mr. ENGLISH. Are you familiar with the Canadian program?

Mr. WEITHONER. No, sir.

Mr. ENGLISH. Are any of the gentlemen here familiar with that—their use of training simulators?

Mr. WEITHONER. We have had people up there—people from air traffic service and our training office. I have not been up there.

Mr. ENGLISH. Are you talking about, on 21 percent, from the day that individual was hired all the way through until he completes his journeyman work?

Mr. WEITHONER. I'm saying that 21 percent of the people are failing as a result of the first 16 weeks of their training.

Mr. ENGLISH. How long is his total training—from the time he's a journeyman all the way through from the first day until he completes his journeyman work?

Mr. WEITHONER. It depends on the type of facility he goes to. It can be up to 4 years, or it can be as short as 2 years if he goes to a low-level——

Mr. ENGLISH. That's exactly right. It depends upon the type of installation that he goes through. If he's handling cross-country flights, it may be 4 years before he completes that work. If he's dealing with one of the major metropolitan airports in this country, it will be less than that. Isn't that correct?

Mr. WEITHONER. I don't think it would be less, sir.

If he goes to one of the major terminals, it still takes him several years to progress up to——

Mr. ENGLISH. All right.

And if he ends up at one of our smaller airports?

Mr. WEITHONER. Then he may get productive in something like 1½ or 2 years.

Mr. ENGLISH. Now what's the washout rate from that first 4 years, or until he completes that journeyman process?

Mr. WEITHONER. The best estimate we have right now—and, of course, you always are looking back several years because you're looking at people who came into the system 4 and 5 years ago—there was about a 23-percent loss to the en route and terminal option. Some of those people will go from one facility to another. The statistics we have are that about 38 or 43 percent, which has come out of a study by the Institute of Defense Analysis——

Mr. ENGLISH. So if he fails at one installation, he gets a transfer or downgraded to another one to see if he can handle the job there.

Mr. WEITHONER. He may not fail, sir.

Mr. ENGLISH. Well, if he can't cut the mustard. That's basically what it amounts to. If you don't want to call it failing, that's fine.

Mr. WEITHONER. Some of them do fail.

Mr. ENGLISH. But he's not kicked out of the program. If he gets into cross-country flights—if that's the slot that he was hired for and trained for—and he goes to work there and they suddenly find that he can't cut it and it's too much for him, isn't he then downgraded?

Mr. WEITHONER. Some of them are, yes, sir.

Mr. ENGLISH. And if he can't cut it there—say, at a major metropolitan airport—he's downgraded again isn't he?

Mr. WEITHONER. Maybe. I think that would be relatively rare. Some of them also drop out of their own accord. They decide they don't like rotating shift work; they don't like the pressures; some of the women get married—things like that. There are a great variety of reasons for people dropping out.

Mr. ENGLISH. There's one other point that I want to make. With regard to the simulators—I think this is bringing it out and focusing on the importance and necessity of having these training simulators in place—not only, as I said, in what it costs the country in money and washout but also what you're talking about in the way of lives.

The whole thing comes down to the Canadians now. They were experiencing about the same type of washout that the United States is now experiencing.

Keep in mind we have had the people who pass through the pass-fail system. Everybody was passing from most of the statistics you have. We haven't flunked anybody until recently. He just glides on through school.

Basically, they're down now to where they have less than 10 percent washout. In fact, they had one class go through where they didn't have a single soul who failed. Now I wonder why that is?

Mr. WEITHONER. I can't say.

We've had classes go through our new academy training program in the past 2 years where virtually no one has failed. I think we may have had one.

For the last 2 years, we've been grading rather tough. In fact, we've had a number of complaints about grading too tough.

Mr. ENGLISH. They're talking about from the beginning day all the way through that journeyman period. They're down 10 percent or less.

It basically comes down to this. The first day before they even hire a guy on, they can check him out on a training simulator and see if he can read the radar. That would seem to me to be an elementary part. We can't even do that. We can't even tell if the guy can read the radar until we've invested a considerable amount of money in him.

Mr. WEITHONER. I agree that we do not have anything on which we can test his ability to read radar.

Mr. BURTON. Why don't you?

Mr. WEITHONER. We're trying to get it, sir.

Mr. BURTON. You've been messing around with the simulator contracts for I don't know how long. You used the case that because of the energy situation, people might not be flying as much. I don't know how relevant that would have been anyway. But if you didn't look at it as an investment in people's lives, you could at least have looked at it as a dollar investment and figured out how much it would have saved by cutting down the attrition rate among air traffic controllers.

If you don't want to think safety, think dollars. If you don't want to think dollars, think safety.

The only reason you're there is to insure safety. If you blow dollars in one place, you can't spend them someplace else.

Mr. ENGLISH. Excuse me, Mr. Chairman.

On one point, you raised the question of money.

Isn't it true that the Congress finally got tired of messing around with you all?

Didn't Congress back in 1968 and 1969 and 1970 and 1971 put up the money and appropriate the money to buy these training simulators? That you couldn't get your act together and spend it, and the Congress finally took it back? Isn't that correct?

Mr. WEITHONER. There was money appropriated in about fiscal year 1971 of about $4.5 million.

Mr. ENGLISH. Yes. And didn't Congress finally take it back?

Mr. WEITHONER. I don't believe so.

Mr. ENGLISH. They just didn't appropriate for the next year, and that's basically what I mean about taking it back.

Mr. WEITHONER. I believe what we did is that we used part of that money to produce simulation capabilities in the facilities.

Mr. ENGLISH. And you took $1 million of it and gave it to GTE-Sylvania.

Mr. WEITHONER. Yes, sir. I testified to that.

I would like to add, though, that we used additional parts of that money to buy simulation capability in the facilities—where we now have simulation capability out in the operational facilities that's useful in the training——

Mr. ENGLISH. That's where you do the OJT. That's basically when you take the boy out and say: Here's what a radar set looks like. We have a little free time here, so you mess around with it a little while.

Mr. WEITHONER. I don't believe——

Mr. ENGLISH. How long a period of time does the person stay there?

Isn't it true that all he's doing is hanging around there waiting on a class to open up in Oklahoma City. He may be there for a year. It depends on the way that the money is flowing in his particular region as to what time he's going to be going there?

Mr. WEITHONER. No, sir. That's not true.

A man who goes to Oklahoma City now, in the en route and terminal options, is on duty. He's a GS–7; he's the great bulk of the people we bring in.

He is on duty in a facility for 2 weeks before he goes to Oklahoma City to take his 16 weeks of——

Mr. ENGLISH. How long has that been in effect?

Mr. WEITHONER. Two years.

Mr. ENGLISH. A full 2 years?

Mr. WEITHONER. January 1976. So you have me by about a month.

Mr. ENGLISH. I believe this is another one of those areas where the committee could take a little credit. We kind of brought that to you all's attention a couple of years ago.

Mr. WEITHONER. You made a substantial contribution to that, yes, sir.

Mr. ENGLISH. I'm glad to hear we're doing some good.

Mr. BURTON. But there is so much yet to be done.

Mr. ENGLISH. Thank you, Mr. Chairman.

Mr. BURTON. You anticipate awarding a contract sometime in February 1978?

Mr. WEITHONER. Yes.

Mr. BURTON. Who's going to manage that contract; what type of program are you going to set up to monitor it; what type of contract are you contemplating?

Mr. WEITHONER. The contract will be managed by a program manager in the Systems Research and Development Service in the FAA. The gentleman's name is Kassing, and he is the one who is given overall responsibility to manage the total effort.

Mr. BURTON. What kind of contract will it be?

Mr. FRAKES. The contract will be a cost plus incentive fee.

Mr. BURTON. That's the best a company can get, isn't it?

If I was in the business of manufacturing, wouldn't that be the most desirable type of contract?

Mr. FRAKES. It's our opinion that it's the proper type for the type of procurement we're making.

Mr. BURTON. It would really be terrible if the contract awarded ends up costing a lot of money and Mr. English is really right that there's a simulator sitting up on a loading dock somewhere waiting to be installed.

Now, if you had more simulators, I assume this would probably help you obtain more competent air traffic controllers? Aren't the air traffic control facilities and centers somewhat understaffed in some places?

Mr. WEITHONER. At O'Hare, they have difficulty keeping the number of people at the top levels—the journeyman levels. It's a difficult facility to staff.

Generally speaking, we are not understaffed. At O'Hare we have an adequate staff to do the work.

Simulators would help in training.

Mr. BURTON. What does that mean? You couldn't use another controller at O'Hare?

Mr. WEITHONER. I'm sure we could always use one, but basically the staff——

Mr. BURTON. Wouldn't it improve safety if you had a few more?

Adequate is a very scary word when you deal with safety. Adequate is fine when you are talking about a meal. But when we're talking about safety, adequate is——

Mr. WEITHONER. I believe Congress is authorizing enough positions for us to do a first-class job in air traffic control and run a safe operation. I believe the O'Hare operation is safe.

Obviously, I am not a technical expert. Those with whom I deal in the air traffic service are very satisfied that that's a safe operation. It's one of the most productive in the world.

Mr. BURTON. You have a lot of planes arriving and departing?

Mr. WEITHONER. Yes, sir.

Mr. BURTON. Let's look at ARSR-3, for a change of pace.

The Keegan study talked about the ARSR-3. They said that the ARSR-3 contract is an example of questionable decisionmaking. The Government seems to have derived very little from the $4 million prototype program. To paraphrase the Keegan study, the objectivity of the decision to proceed to production appears questionable. The production contractor advised the FAA of financial difficulties only 7 months after the production contract was signed, and had begun to submit no cost engineering change proposals, and was then predicting a 9-week delay in delivering the first and all subsequent systems. That would tend to confirm that they're a little bit screwed up.

You say that the contract is now on schedule with no problems. The GAO says that you're at least 6 months behind. Where are you with the ARSR-3?

Mr. SHARP. Mr. Chairman, the ARSR-3 contract is——

Mr. BURTON. Please identify yourself for the record.

Mr. SHARP. My name is Warren Sharp. I am Director of Airways Facilities Service, which has the responsibility for the technical functioning of this contract and delivery of the hardware.

The ARSR-3 is about 6 months behind the original contract schedule. I believe Mr. Bond's statement this morning said essentially on schedule, or words to this effect.

We are currently about 6 months behind the original contract schedule for delivery of the first ARSR-3. We anticipate it will be delivered either this December or January of 1978.

Mr. BURTON. Thank you.

Right now, I guess the only person who could appear here and at least be comfortable is Administrator Bond. He can always say he didn't do it, that it was before his time. The personnel in FAA seems to be the same. Everybody here is a career employee and has been in FAA a long time and been involved in a lot of these problem contracts. I guess they can't be held responsible for decisions of Mr. Dow and Mr. Butterfield, or can't be responsible for Mr. Begg's decision to go against the recommendation of the FAA in the ASR-8 contract.

But these same people are in the same kind of decisionmaking process, at the level below that of the Administrator. What are you going to do to change the way it's been going all these years if you have the same team? You're a coach and you have the same ballplayers.

Mr. BOND. My opening statement, Mr. Chairman, alluded to our new procedures for handling the acquisition of major systems.

I believe, for example, in accordance with the Air Force's recommendations, we'll certainly provide greater documentation for the decisions we make. The new procedures will require us to articulate and write out all the reasons for doing things—starting with mission needs and continuing throughout the process.

So certainly in the future, the committee and others who are interested will be able to track our decisions pretty well on paper.

That system will be set up regardless. We're moving into it.

I will take a personal interest in it, of course. Other Administrators have in the past.

I don't believe that there is any system, however, Mr. Chairman, that can possibly be set up that will eliminate the possibility of error or change in judgment. We will attempt to do our best to combat that.

In going through a discussion of this kind, it occurs to me that it's worth noting that the FAA has procured more than $1.5 billion worth of hardware over the last several years and with considerable success.

I don't mean to suggest that you or the members of this committee deny that, but there is a great——

Mr. BURTON. You do some good and some bad. But as our report indicated, you seem to have done it by gosh and by God, that there wasn't a procurement system.

Mr. BOND. Mr. Chairman, that's a good point.

Each time a bureaucratic system is overlayed on top of another system and more formal decisionmaking processes are required, it makes it possible to pinpoint where decisions are made. However, it also stretches out the time requirement. It causes us to rely more and more on written paper judgments, and possibly less on intuitive engineering and management judgments.

One portion of the testimony that I heard this morning from the GAO was that when Under Secretary Beggs made his decision in favor of General Dynamics, we protested that we didn't think—Jeff and the others—that General Dynamics could do the job and deliver the radar.

But as discussed in the earlier testimony, we were unable to write a detailed decision document—a justification for our arguments. That's a very difficult thing to do.

If we rely entirely on bureaucratic processes and systems, it is sometimes just not possible to justify your intuition. What our intuition told us, we could not satisfactorily justify for Jim Beggs.

Overall, with the FAA, we've had a record of——

Mr. BURTON. Would you repeat what you said about your intuition and Mr. Beggs?

Mr. BOND. It was our intuition and our strong feeling, which we represented to the Under Secretary, Mr. Beggs, that this procurement should not be made from General Dynamics and that T.I. was the better of the two sources.

I caught in the GAO testimony this morning that we did not provide a document of some kind to support that. That was said. And so Jim went forward with his own best judgment. I wasn't here, and I can't testify to all that. But each time we rely more and more on written justifications, hoping to be able to explain to later examinations, we cause our system to slow down somewhat.

If we can make large jumps in the process, based on good judgment and not written, we will buy time in our procurement procedure.

I hope that we will be able to buy things in a timely manner based on good judgment under the present system. I'm sure that it

will be helpful in recording things on paper, Mr. Chairman. I am not so confident——

Mr. BURTON. I'm not talking about mere recording.

When there is a given amount of money, those things should be recorded.

Out of idle curiosity, I would like to know why it took so long to OK somebody to change the color of some paint. That one could have been done with a phone call, I guess.

Mr. ENGLISH. Would you yield, Mr. Chairman?

Mr. BURTON. I'd be happy to yield.

Mr. ENGLISH. Mr. Bond, from what you're saying here—at least the drift that I'm getting—you are kind of waltzing through this deal. Basically what we're talking about here is a couple of possible mistakes that were made by some folks way back yonder. And the reason that they made those mistakes is that these companies really didn't come through and really didn't perform. And we've done lots of other stuff, and we haven't found any problems there.

But the point that comes down, and the trouble that I have with the whole thing—and I don't know about the other members of the committee—is that there are some things about all three of these arrangements that smell to high heaven They don't smell like mistakes to me. They smell like a great deal more.

The thing that has troubled me ever since I've been here, since February 1975, which was a month after I was sworn in and just right after I came on this committee and we first started dealing with the FAA, there hasn't been a blasted soul over there who has done anything to try to dig the truth out on any of this.

That's what it's come down to.

We have people up here talking about this meeting on the Space Research Corp. thing in December 1973. They give us one or two answers. This matter is in litigation, and therefore we can't talk about it. And that's what happened to the former chairman.

The chairman offered to take this committee into executive session if that's what it took to get the truth out and to find out what happened. They decided that wasn't necessary. But then they couldn't remember, even though they kind of had some idea who was at the meeting, who made the decision.

Now that's part of the thing that we get down to, and that's part of the problem and the reason we would like to have something written down as to who made a decision, particularly one as expensive as this one.

This has been an extremely expensive proposition for this country.

I can see absolutely no excuse when you have the Associate Administrator, Mr. Flener, who says that this equipment is excellent equipment; but for some reason, something mysterious happened back in December of 1973 and now all of sudden FAA decided because of the energy crisis that people aren't going to ride airplanes any more.

That's about how much sense this whole thing made.

Therefore, the FAA wrote a letter and canceled out—within a 60-day period.

Now doesn't this cause problems for you?

Mr. BOND. I try to put myself in the place of the FAA Administrator during a time of worldwide oil shortage. An energy crisis is a genuine thing. People were talking about a 50-percent reduction in the availability of fuel for general aviation purposes, which would clearly reduce the load on our air traffic control centers—all of our 18 facilities.

The decision then was made that all this training wouldn't be necessary.

In retrospect, today, it's obvious that it's not right; but it certainly seemed logical in those days. I can tell you that I was in the highway business, affected by similar energy-sensitive matters, and it seemed to me a terribly threatening thing at that time also.

Mr. ENGLISH. Let's get down to December 1973. Is it not true that during that period, one of the ways—and what we're still doing right now—to combat the energy crisis is to use public transportation? Is it not true that aircraft is a public transportation? Is is not true that part of that cutback, or a good percentage, was going to come as far as private aviation was concerned?

Mr. BOND. I don't want you to think that I was a supporter of the notion that aviation should bear the greater burden of energy saving. I think it should bear its proportional share.

But the Government's policy at that time, nonetheless, seemed to have been tentatively to cut back more heavily in the use of aviation fuels.

Mr. BURTON. The issue really isn't that the guy made a guess on the impact of the energy crisis on the need for simulators. It's that we don't know the how and why of certain decisions because we don't have records. And that's what concerns us.

The appearances are what Mr. English is talking about. You almost hope that these decisions aren't mistakes, because then they at least make sense somehow. If they are mistakes, it's almost more unforgivable.

A lot of things happened: People are doing business and having conversations and there's no record of the process. That's the concern we have.

We could argue over the judgment itself, but a lot of things happened which aren't in the public record, when they concern the public's money.

Mr. SMITH. Mr. Chairman, a good many of those events have been reconstructed by affidavit in the litigation as a part of our motion for summary judgment. We would be happy to furnish that.

Mr. BURTON. They have been reconstructed out of people's minds. You had nothing——

Mr. SMITH. They were affidavits under oath, Mr. Chairman.

Mr. BURTON. In violation, I assume, of the Federal Procurement Regulations, there were no recorded——

Mr. SMITH. I don't think that that particular Federal Procurement Regulation requires that every internal meeting be documented.

Mr. BURTON. I think that when you're dealing with some fairly substantial matters, in terms of either dollars or policy—if you are talking about going to the Redskins game, I don't think that you have to write a memo.

Mr. SMITH. That's correct.

The new procedures would insure more documentation as a matter of course—the Systems Requirement Group and the SAM process procedures.

But we have, as far as SRC is concerned, reconstructed many of those events from our own documents and from SRC's internal documents. They are a public record. They have been filed with the Court of Claims, and we'd be happy to furnish them.

Mr. BURTON. FAA to date has designated five major systems to be brought under your Systems Acquisition Management (SAM) process. You also state that in March of 1978 you are scheduled to bring in more systems.

What criteria are you going to use in deciding which systems you will bring under the SAM process?

Mr. BOND. Mr. Chairman, we have been advised by the Air Force, which is good at this, to go into it in a slow and systematic way. Don't put all our procurements in right away, or we will be overburdened with paperwork. So we have selected five. We have a number of candidates to put into the system as we get the process underway.

As for the criteria, perhaps Gene could tell us.

Mr. WEITHONER. One of the first ones is the dollar allocation. Of the five we have that we're beginning to get into the process, all are programs that would exceed $100 million in the total life cycle costs.

Another one would be sensitivity. It is particularly critical that we get this procurement and get it on time and on schedule.

There is something coming up having to do with wind shear, and that's a candidate to be put on because it's an important safety-related item.

Another one would be direct access radar channel. It's a big contract. It's sensitive, and it's the kind that we think the Administrator ought to consider whether he's going to follow or not.

Those are the considerations we look at.

Mr. BURTON. And the amount of money involved is important?

Mr. WEITHONER. The amount of money is important and sensitivity to the safety mission, whether we anticipate technical problems, whether we think we need especially to keep close watch on one to be sure the requirements don't change—all those things enter into it.

Mr. BURTON. There would be a lot of judgment calls.

Mr. WEITHONER. Yes, sir.

We present a list of candidates—or we did; that was before Mr. Bond's time—to the gentleman who was then Administrator, Dr. McLucas. He gave us some general guidelines on what he wanted in there, particularly for the first cut.

Now we'll give Mr. Bond a chance, within a few months, to add those that he wants to put into the system.

Mr. BURTON. Will he use the old guidelines, or will he hopefully have some new ones?

Mr. WEITHONER. Of course, the Administrator can add whatever he wants.

Mr. BURTON. Good.

The Keegan study mentioned that a number of contracts administered by the Contracts Division were delinquent. And that until

recent months before the report, reporting and corrective action on those delinquent contracts hadn't been organized.

What are you doing now, and how many delinquent contracts are there?

Mr. FRAKES. We have made a number of improvements in the total.

Mr. BURTON. It was easy to do.

Mr. FRAKES. Yes.

Of the total of about 62 recommendations made, about 37 of those did apply to the Logistics Service. We have taken action and have implemented nearly all of those. There are still a few that are in the process of being implemented.

Mr. BURTON. How many delinquent contracts—which was the question, I think.

Mr. FRAKES. I have that data, but I don't have it in front to me.

Mr. BURTON. While you're looking for that, I have another question.

Could you give a detailed description of how you monitor all contracts? Do you have clear milestones against which actual progress can be measured with that originally estimated? What prompts a review program and who would make that determination? Do you always require the contractor to supply you with sufficient information to estimate cost to completion, or do you go out and gather that information yourself? What's the relationship between the SRG and the quality assurance program conducted by Logistics? How do you oversee and monitor the process?

Mr. FRAKES. You are asking a number of questions there, Mr. Chairman.

Mr. BURTON. That's right. I could do them one at a time.

In other words we really want to know how you monitor your contracts. How do you find out very early on next time that a General Dynamics is going belly up and that maybe you can only buy one antenna?

Mr. FRAKES. In the cost control area, and that was discussed earlier in the testimony, we are now on all cost incentive contracts requiring contractors to furnish a quarterly report of all expenditures to date and forecast for the future requirements.

Currently—and since the report is critical of our cost incentive reporting—on selected contracts—and I will use MLS, ARTS-III enhancement contract, DABS contract—we require the contractor to furnish a monthly cost status report. He furnishes the cost data against his budgeted costs and related to actual costs and then cost to completion.

We have looked in depth at this. The Air Force has a cost schedule reporting system. We have taken their basic system, which is a very complex system, and made some modifications.

Mr. BURTON. They've had a few overruns.

Mr. FRAKES. Yes, sir.

We are out to implement that, and we will have it implemented on all cost and incentive contracts by the end of this fiscal year.

Mr. BURTON. What prompts a program review?

Mr. FRAKES. The contract will require a program review every month. The cost reporting systems are reviewed.

Mr. BURTON. So that's going to happen every month on the contract?

Mr. FRAKES. It is. And it's happening today on selected contracts, such as the DABS contract.

Mr. BURTON. General Dynamics claimed that part of the schedule slippage was due to FAA delays, such as the wonderful paint color change.

How can FAA respond more quickly to the contractor? If they have problems, how can the FAA expedite solutions so that they can't later point the finger at you and say that the contract will cost more money because, for example, they had to keep these seven painters waiting?

Mr. FRAKES. Mr. Chairman, that is a troublesome area; and it has been a troublesome area. It needs more attention, and it's certainly going to be given more attention.

But in the area of specification interpretations, requests for deviations, requests for use of parts that are outside of the specification, those reviews are done by the program office. Maybe Mr. Sharp could add a comment. But that has been a troublesome area.

Mr. BURTON. Couldn't you divide that effort into important items and less important items like paint—or maybe paint is important; I don't know.

Mr. SHARP. Mr. Chairman, paint, obviously, I am unable to address. There would seem to be a simple solution to the paint problem.

Mr. BURTON. Yes, but it took a long time. I think it was either 4 or 6 months or weeks.

Mr. SHARP. I think we're talking about perhaps 5 or 6 weeks.

Mr. BURTON. Six weeks for an approval, and 5 months to get it to the contractor.

Mr. SHARP. Yes; I believe that was the statement. But I would suggest that's a fairly simple example, and it probably didn't really make any difference to the contractor one way or the other.

I would suggest that in the case of the ASR–8, when this arose, the specifications——

Mr. BURTON. But it didn't make any difference to them. They could stop everything and say they were waiting to get an OK on the paint from FAA. Then when it cost more money, they could say: Don't look at us; we've got this registered letter, and we're still waiting.

So it should have been a simple thing for you to give them an answer.

Mr. SHARP. It should have been and I can't respond why it was not.

Mr. BURTON. Right; it defies——

Mr. SHARP. I would suggest though that the ASR–8 specification is a highly detailed specification that has many interlocking technical parameters. A request for a deviation from one portion of the specification may involve a number of elements of the system that are not readily apparent.

Mr. BURTON. I can imagine that. The paint was the one that hit me.

I can imagine that on fixtures or component parts there is a great difference.

ASR-8 is a very complex. How much more complex is that than the ASR-7?

Mr. COCHRAN. It is quite a bit more complex, Mr. Chairman, in a number of features. It is the first time that we've used a dual beam antenna system in this way; we get a significant reduction in the clutter on the scope.

We have some fairly significant improvements in the reliability aspects of the system by the type of design and antenna pedestal. The antenna itself is a single failure point in the system. We have dual transmitters down in the building, but the antenna and the thing that rotates is only one. So we specified a high reliability antenna system.

The antenna itself was a very demanding antenna pattern to get good high-angle coverage and good coverage down at the lower angle at the same time to reduce clutter and to give us more siting flexibility and better performance as far as the controllers were concerned.

It also made an attempt to do some things that we hadn't done in the past in the way of range azimuth gating to present to the controller the most optimum radar display possible with a particular azimuth and range of the radar set. So we could use the best features of the radar in the areas it's possible to use it in.

I think it is a highly flexible radar and will be a good radar set when it's in its operating history.

Mr. BURTON. In 1974, the Director of FAA's Research and Development Service said that under no circumstances did the Research and Development Service believe that the ASR-7 should be traded for the G.D. prototype ASR-8. And that the improved features of the G.D. prototype were considered insignificant by the FAA contract technical officer, in fact, so insignificant that it would have cost the contractor more to remove the improved features from the design than to leave them in.

Mr. COCHRAN. I think we're talking about two different things. We may not be. But the ASR-8 is a significantly improved radar over the ASR-7. I don't think there is any argument anywhere.

Mr. SHARP. May I respond, in part, to that question?

The question involved, I believe, refers to maintainability. The improvements of concern were fairly insignificant. The manufacturer had elected, in addition to what the specifications called for, to provide some additional features, principally from the standpoint of——

Mr. BURTON. Justifying the high cost of the one radar system?

Mr. SHARP. No, sir, I don't believe so. His original plan had been to provide some additional features that simplified testing and maintenance activities. I believe these are the two or three elements we referred to as being relatively insignificant, insofar as the use of the radar at NAFEC.

The ASR-8, as intended to be produced by General Dynamics, was a completely different design, as far as we know, than the traditional designs in this country. It was a design executed by Thompson CSF, a French organization and producer of radars in Europe. It would have been our first opportunity to have in the agency inventory a radar with perhaps significantly different design characteristics, in terms of approach to electronic circuitry.

This was the original purpose of an attempt for the use of the prototype system at NAFEC.

Mr. BURTON. So that was the rationalization.

In other words, you thought, what are we going to do? We're going to keep General Dynamics competitive. Then how are we going to explain it? We're going to have this one system that's a little fancier than the others and hope nobody asks any questions.

Mr. SHARP. At least different.

I don't know about anyone asking any questions. We anticipated it would be a substantially different radar, in terms of circuit design and approach. That was clearly borne out by the G.D. design data that they had prepared.

Mr. BURTON. They couldn't meet the contract, and they're giving you icing on the cake.

Mr. SHARP. I believed that the icing was—as part of the original production, to provide those additional features. And it turned out that they——

Mr. BURTON. For nothing.

In other words, they were just throwing these features in as good will, and they couldn't meet the terms of the basic contract.

Mr. SHARP. The original purpose—the avowed purpose—was to provide in the production contract those additional features, Mr. Chairman. It turned out——

Mr. BURTON. That they fell short of the mark.

Mr. BUTTERWORTH. Mr. Chairman, I'd like to make one observation.

At this point, the FAA has spent $10.6 million on General Dynamics' contract.

According to figures supplied by the FAA, there was $99 million appropriated by the Congress for the ASR-8 procurement. Now the ASR-8 represents certain safety improvements over the seventh generation of the same system; is that correct?

Mr. COCHRAN. I think any operational improvement in a system someday winds up, of course, by being——

Mr. BURTON. Why can't you give that question a yes or no answer?

Mr. COCHRAN. I don't want to say that the radars we have there are not safe. They are.

Mr. BURTON. Nobody was saying that. Seven seatbelts are better than six.

Mr. COCHRAN. Correct.

Mr. BUTTERWORTH. The ASR-8 is better in that it would better enable a radar controller in the tower and the approach control center to better detect small aircraft and to avoid midair collisions.

Mr. COCHRAN. That's correct.

Mr. BUTTERWORTH. How many ASR-8's are you going to install at terminal facilities?

Mr. COCHRAN. As I told you, the number we have under contract I don't recall. I can look it up here.

Mr. SHARP. We currently have under contract with T.I. 63 ASR-8's, of which 8 are to go to the military. So there are 55 being placed in terminal areas—55 include NAFEC, Academy, MASR and 3 storage.

Mr. BUTTERWORTH. I'm trying to make an editorial point here.

The $10.6 million that went down with General Dynamics could have been used with the current Texas Instruments contract to provide more ASR-8's and to provide them where they are needed.

Mr. COCHRAN. I think that every place that now qualifies for radar is so in our budget and is covered if it meets the criteria.

Mr. BURTON. What's your backlog?

Chairman Brooks in 1972 asked for one for Beaumont, Tex.; and they said they'd install it sometime in 1976. So if there was a 4-year backlog then for Chairman Brooks, what's the backlog for everyone else?

Mr. SHARP. Mr. Chairman, I believe we're in an excellent posture.

Mr. BURTON. I don't want one.

Mr. SHARP. Every approved location—approved by the Congress—is in the process of being implemented through the fiscal year 1978 program.

Mr. BUTTERWORTH. I hate to get back into the history of the contract once again, but I think our record needs a little more clarification.

Mr. Cochran and Mr. Frakes, you mentioned that the $12.8 million figure came from a General Dynamics offer; but you didn't date that offer. You stated earlier on today that an offer had been made.

Mr. BURTON. When we asked where the figure came from for the settlement with General Dynamics, you said it came from them.

Mr. BUTTERWORTH. We want to know when and where.

Mr. SMITH. From the records, you can see that there were discussions prior to August. Then on August 24——

Mr. BURTON. No, from the record that was made here today.

Mr. SMITH. OK. But——

Mr. BURTON. Or do you have a record we don't know about? We've been having trouble finding records on this one.

Mr. SMITH. On August 24, there was a telegram delivered to General Dynamics which set forth the modifications. They accepted it on the 24th.

So for the purposes of documenting the contractual action that we're putting in the file, you take that subsequent formal modification signed 6 months later in 1975.

Mr. BURTON. But when did General Dynamics say that their figure was $12.8 million? When did they say: That's what we want, and you can't sue us for breach of contract? Because that was their leverage against us. We could have sued them for breach of contract, because they weren't going to fulfill the terms of the contract. Instead, they did us a favor. Instead of having us sue them, they accepted this $12.8 million. I'm just wondering what was the day when they made that magnanimous offer.

Mr. SMITH. What we would have done would be to default them if we had thought that that course was appropriate.

Mr. BURTON. There couldn't have been any question in anybody's mind when the two gentlemen came back from Florida that it was disasterville.

They heard rumblings and went down. They came back and said that it was worse than they had previously thought.

I'm sure they didn't say that. I don't know what they said, because we don't have a memo. But I'm assuming that was it.

Because shortly thereafter, there was a telephone call. Nobody knows about it except the fellow who signed the memo. There's a meeting, and the options are laid out. Dow, I guess, recommends to Butterfield that we accept the General Dynamics offer to give us 1 radar and 40 antennas for $12.8 million.

I'm just wondering, what was the date when they said: Our figure is $12.8 million.

Mr. FRAKES. Mr. Chairman, my recollection is that officially General Dynamics furnished a proposal and cost data on August 8 that contained that $12.8 million.

Mr. BURTON. But the decision was made at a meeting that took place sometime between your return from Florida and the July 17 meeting. There must have been a decision, and to reach that decision you asked, in effect: "What can you give us?" And they said, "We can give you 1 radar and 40 antennas, and we'll let you know in a couple of months what the price is."

In other words, we just accepted an offer and told them to fill in the amount?

Mr. FRAKES. No, sir.

Mr. BURTON. Then how could you have made the decision on—what date did you say in August?

Mr. FRAKES. August 8.

Mr. BURTON. The decision was made by Butterfield prior to July 17. How does that coincide with your statement?

Mr. FRAKES. I don't know. I don't think I can answer that.

I can say this. I'm sure that the $12.8 number was given verbally; but I was only saying that officially they made a proposal with some cost data.

Mr. BURTON. Given verbally when and by whom?

Mr. FRAKES. I don't know.

Mr. BURTON. In other words, you're assuming that?

Mr. FRAKES. The $12.8 number was used certainly before it was submitted officially.

Mr. BURTON. When did you first hear it bandied about?

Mr. FRAKES. I don't recall.

Mr. BURTON. During the meeting with Butterfield? When Mr. Butterfield made the decision, somebody must have known the numbers.

Mr. FRAKES. That number was used at the meeting.

Mr. COCHRAN. We had a budgetary estimate of some sort. I don't remember the exact figure. But there was a budgetary estimate of the amount. I think it was around that figure. But I don't remember——

Mr. BURTON. Who gave the budgetary estimate?

Mr. COCHRAN. We talked to General Dynamics.

Mr. BURTON. Who did you talk to at General Dynamics? Was this when you were down there or when you came back?

Mr. COCHRAN. I don't believe we talked about that figure when we were down there.

Mr. BURTON. Did you talk about any figure?

Mr. COCHRAN. They talked about the cost to complete the radar contract as it was currently structured.

Mr. BUTTERWORTH. What figure was that?

Mr. COCHRAN. Around $33 million. That's what they said it would cost.

Mr. BURTON. $33 million and 9 months.

Mr. COCHRAN. Nine to twelve months.

Mr. BURTON. Was there a question in your mind about whether they could have done that?

Mr. COCHRAN. Could have done what?

Mr. BURTON. Completed the contract at $33 million in 12 months.

Mr. COCHRAN. Yes, sir. There was a question in my mind whether they could have or not.

Mr. BURTON. I'm trying to figure what would have been a better buy. I guess on a unit price it would have been cheaper at $33 million.

Mr. COCHRAN. But I don't believe we would have had the radars in time. We got the radars in time the way it is now.

We have the radars, and they are operating.

Mr. BURTON. I guess it will remain the unanswered question.

I just can't figure out how in God's name Mr. Butterfield decided to give away the people's money to General Dynamics. Maybe the people owe him the money for blowing the whistle on the tapes. I just don't believe that it should have gone to General Dynamics.

Mr. BUTTERWORTH. Mr. Chairman, I'd like to bring out a point which has been implied throughout many of our comments. And I think we're concerned that the present Administrator be brought into this discussion.

It's my understanding that when the decision by the former Administrator was made, it was based upon the July 17, 1974, alternative action position paper, which you two gentlemen drew up. At least the decision by the Deputy Administrator was primarily made on the basis of that paper. That's what he told Mr. Rider in an interview.

That paper was very faulty in a number of ways. First of all, I believe it does not discuss termination for convenience. Second, it presents no disadvantage to the alternative proposed, the procurement of 1 radar and 40 antennas for $12.8 million.

In fact, I have a letter here from FAA's General Counsel's office that comments on this paper. It states: "The paper does not present the disadvantages associated with the recommended course of action."

It also states: "Therefore, we are not taking any position on the recommended course of action at this time."

What really concerns me is the possibility of two service directors approaching the Deputy Administrator or the Administrator with incomplete information and then allowing him to make his decision on that basis. I should think that would concern everyone here.

Mr. BOND. Is the question whether the briefing and information presented to the Administrator was complete and adequate?

Mr. BUTTERWORTH. Mr. Dow told our subcommittee investigator, detailed to us by GAO, that this decision was based primarily on the paper prepared by Mr. Cochran. That paper was and is faulty. FAA's General Counsel's office says it's faulty.

Mr. WEITHONER. Did Mr. Dow identify that as the paper?

Mr. BUTTERWORTH. Yes.

Mr. WEITHONER. That particular piece of paper?

Mr. BUTTERWORTH. The alternative action position paper; yes.

Mr. WEITHONER. And he said that was the primary basis for his decision?

Mr. BUTTERWORTH. Yes.

Mr. BURTON. Except for the omission you're talking about, it said here's all we can do. We can let them do something else and other companies will get mad at them. We can terminate, and they'll get mad at us. We can try to use the public law and claim it's a national interest necessity, but that would raise problems.

There's no way in the world that someone could have looked at that alternative action position paper and said that it was a thoughtful one. It's like a small outline of a law student.

Mr. BUTTERWORTH. I might add, as a postscript—and correct me if I'm wrong—that the Deputy Administrator said that he was never made aware of the General Counsel's office paper. So he was not aware of their views.

Mr. WEITHONER. I think he was aware of at least some of the General Counsel's views.

Mr. BUTTERWORTH. Some of it. What about this particular document?

Mr. WEITHONER. I can't say that someone put that document in his hand. I can say that the Counsel's office was represented at the meeting which I attended.

Mr. BUTTERWORTH. That's Mr. Anderson.

Mr. WEITHONER. They had full opportunity. I can also add——

Mr. BURTON. That was the very first preliminary meeting. They came back with the report from the battlefront.

Mr. WEITHONER. That was the first meeting after the Orlando trip, as I recall.

Mr. BURTON. Right. It was when they came back. I guess they laid out the facts as they perceived them, and everybody probably went back to figure out how they could get out of this one.

Mr. WEITHONER. There was substantially more information. There was a lengthy discussion. We went up and down the alternatives. Mr. Frakes and Mr. Cochran and the other people there discussed every option at considerable length.

In my opinion—and this is my recollection, and I'm not sure how good it is after 3 years—I believe that there was very substantial, extended discussion of all the alternatives.

Mr. BURTON. Who was pushing alternative "Santa Claus?"

Mr. WEITHONER. I don't remember that anybody was pushing that. Everybody was trying——

Mr. BURTON. That's the one that they ended up with. Somebody must have put a nudge in somewhere.

Mr. WEITHONER. I don't remember anyone pushing that one, sir.

Mr. BURTON. Did anybody mention it?

Mr. WEITHONER. Yes, sir; it was discussed.

I believe that everyone there tried to give the Deputy Administrator the benefit of all the opinions and all the alternatives. I believe there was a very thorough discussion on it.

Mr. BURTON. In the discussion on which alternative to go with, the bottom line on the acceptance of General Dynamics' offer was that it would keep them competitive in the civilian radar business.

Mr. WEITHONER. I believe that was Mr. Dow's primary consideration. That weighed very heavily on the minds of Mr. Dow, and, as I understand it, many of the other high-level officials involved. It was a very substantial season; yes, sir.

Mr. BURTON. However, you didn't want to keep this poor company up in Troy, Vt., competitive in the simulator business.

At that meeting it was clear that Dow felt that it was very important to save General Dynamics.

Mr. WEITHONER. He felt it was important to keep another competitor in the business so that when we got to buy more ASR-8's in subsequent years, there would be competition to T.I.

Mr. BURTON. From this company?

Mr. WEITHONER. Yes, sir.

Mr. BURTON. They would have been better off giving it to some new company starting out with a small business loan and hope they could do something.

General Dynamics blew the contract, and the money, and ripped off the Government; so we give them the people's money to keep them competitive in this business. Did you really think they were going to be able to complete the contract?

Mr. WEITHONER. I think Mr. Dow felt that the General Dynamics Corp. was a very large corporation with an awful lot of competence; and that if they——

Mr. BURTON. Which was belied by the fact that you had to discuss five options, one of which was to give them the people's money.

Mr. WEITHONER. I think he felt that they were going to make a good faith effort to deliver; they had the resources and management talent. He believed that they could deliver on the 1 radar and the 40 antennas.

Mr. BURTON. I would hope to God they could deliver the one radar at $10.2 million, when they were supposed to cost about $380,000.

I don't think you were really showing a lot of faith in them. I would think a lot of people could build one radar for $10.2 million.

Then I guess Dow recommended this course of action to Butterfield?

Mr. WEITHONER. I wasn't present.

Mr. BUTTERWORTH. I have one last question about something which really puzzles me, and I think this is the icing on the cake.

In your view, was the ASR-8 system, as specified in the General Dynamics contract, within the "state of the art"?

Mr. COCHRAN. Yes; I think it was.

Mr. BUTTERWORTH. Then why did you change the contract from a fixed price to a cost-type contract?

Mr. FRAKES. We were proceeding on a fixed price basis. When we received their proposal with their costs estimated, it was after evaluation by the negotiation team. It was their opinion that the cost data, as furnished by General Dynamics, did not support $12.8 million. It was changed to a cost with a ceiling, with General

Dynamics obligated to complete, and any overrun over $12.8—100 percent—it was their obligation. These were auditable costs.

Mr. BUTTERWORTH. Perhaps Mr. Smith can answer on this question; as I understand it, when a cost-type contract is used it's very difficult to recover any of the costs incurred unless you prove that the contractee has not put forth his "best effort." Whereas when a fixed price contract is used, the Government's investment is much more secure.

Mr. SMITH. You're touching on the centerpiece of our litigation.

Mr. BUTTERWORTH. I realize that.

Mr. SMITH. The contract, as written, stated in the standard limitation-of-cost clause that the contractor would exert his best efforts.

Mr. BUTTERWORTH. It's hard to prove that best efforts were not put forward.

Mr. SMITH. He would exert his best efforts to perform within the ceiling as set forth in the clause.

On top of that, the agency overlaid a requirement that he complete within that ceiling or bear the rest of the cost on his own.

Normally he's not required to complete under a cost contract. To write a cost contract is a risky business.

So the parties to the contract overlaid a completion requirement on top of the general requirement that the contractor exert his best efforts.

After he agreed to the modification and executed the formal modification, 5 months after that, he stopped all work.

If he's obligated to exert his best efforts, we don't consider stopping all work to be his best efforts. It's on that theory, much more than any other, that we are suing to get our money back.

Now as far as the measure of damages and so forth, I must say that I have not fully explored that, because we're litigating now the question of remedy before the court—whether we have cost reimbursement types of remedies; or whether in view of his subsequent actions and the actual nature of the deal we cut, that we have rights more like those available under a fixed price contract.

Mr. BURTON. That's exactly the term. I think somebody cut a deal with them.

Mr. BUTTERWORTH. What I was trying to get at is, if I were in General Dynamics' position, this is precisely the deal that I would want to get from FAA. I just don't see any other way to state it.

Mr. SMITH. He has a requirement to complete the contract. It is expressly so stated.

Also, in addition, he agreed to waive all claims——

Mr. BUTTERWORTH. In general, isn't it more difficult to protect the Government's investment in a cost-type contract than it is in a fixed-price contract?

Mr. SMITH. The cost-type contract requires heavy monitoring of the costs incurred.

Mr. BURTON. Isn't the answer simply yes. That in a fixed-price contract, the Government is in a better position than it is in a cost-type contract?

Mr. SMITH. For a number of reasons.

One of them is that a fixed-price contract is a completion contract. It requires a contractor to complete.

A normal cost reimbursement contract is not a completion contract. It is a best-efforts contract.

In this case, when the agency added a completion requirement to the best-efforts contract, we achieved something that is halfway between a cost reimbursement contract and a fixed-price contract.

Mr. BURTON. I understand what you're saying. I guess it was really irrelevant. We're giving them money and we can't use what they would have given us back anyway, so what's the difference.

Mr. BOND. I might add one thing, perhaps, to clarify.

The cost of acquiring the first radar from any producer, starting from zero and getting to the point where it is complete, is very high.

Subsequent replications of those—that is to say, a production order—are relatively cheap.

Whether or not Mr. Dow's and Administrator Butterfield's decision to seek a second manufacturer of this radar was in the public interest is obviously subject to debate.

But always, in a decision to spend $8 million or so for radar——

Mr. BURTON. Their decision to do what?

Mr. BOND. To seek a second manufacturing production capability.

Mr. BURTON. Like T.I.?

Mr. BOND. In addition to T.I. As was the case for this decision. I just wanted to point out that the——

Mr. BURTON. That was the original decision.

Mr. BOND. The first radar is very expensive. All of the front-end costs of getting ready to produce were inherent in that $8 million figure or so that you attach.

So if the proposal had worked out to satisfaction, subsequent copies by General Dynamics would have come at a much, much lower rate.

It's not 1 for 37. The front-end costs at first are very expensive.

Mr. BURTON. I understand that.

Here we are in litigation with General Dynamics. If we would have just held them to the contract, we'd be in litigation with them; right?

Mr. SMITH. You'd be in litigation, and you might have a substantial slippage of delivery.

Mr. BURTON. We figured that we were writing them off and were going to Texas Instruments to get the radar. It was obvious General Dynamics couldn't do the job, so the question was: Do we hold them to the terms of the contract, or do the American people bail them out?

The people's Government decided to take the people's money and bail them out rather than hold them to the contract. And the funny thing is that we are in court with them anyway.

Mr. SMITH. As far as the last part of the statement is concerned, that's exactly right.

Mr. BURTON. And if we would have said, you have a contract; deliver or you're in breach of contract, we would be in court with them.

Mr. Romney?

Mr. ROMNEY. Thank you, Mr. Chairman.

Mr. Frakes, Mr. Sharp talked awhile ago about deviations from specifications.

I would like to ask about deviation from the Federal Procurement Regulations and from the Department of Transportation Procurement Regulations. Those same regulations deal with deviations from the regulations. In effect, they say that they must be recorded and justified and a file must be kept. And, in any event, that these deviations should be done as a minimum and only in cases where special action needs to be taken.

So my question is with respect to the ASR-8 and ARSR-3 contracts. Can you give us now, or supply us for the record, the deviation in the individualized contract cases, including the supplemental agreements which were called mod 9? Those deviations that were requested and approved.

Mr. FRAKES. I can't give it to you now, but I can submit it to you for the record.

Mr. ROMNEY. You do maintain a file and a record of each such deviation; is that correct?

Mr. FRAKES. Certainly we have a file; yes.

Mr. ROMNEY. Do you know of any specific deviations offhand?

If you look over here on the chart which is derived from Mr. Rider's testimony, the original contract for the ASR called for the Government to share class 80/20. I presume that refers to the progress payment standards in relation to the costs. That 80/20 represents the maximum under current regulations and under the regulations then obtained.

Do you know any specific cases where deviations from the FPR or the DOTPR occurred in these procurements?

Mr. FRAKES. The 80/20 that you're referring to relates to the incentive clause.

Mr. ROMNEY. What about the monthly status reports, the cost status reports, subcontract cost trend reports, the overhead rate reports, production progress reports, which were originally required, and the monthly status reports which were the sole residue after Mod 9?

Mr. FRAKES. I don't know the answer to that, sir.

Mr. ROMNEY. Then you will be prepared to submit for the record the summary, or the specifics, on the deviations from the FPR and the DOTPR?

Mr. FRAKES. To the extent that they exist, I will attempt to supply that for the record; yes, sir.

Mr. ROMNEY. Thank you.

[The material is in the subcommittee files.]

Mr. BURTON. That concludes the questions we have for you today.

The subcommittee will resume tomorrow to discuss certain safety problems, including the see and avoid technique, and follow up on the internal memorandums concerning potential workload increase caused by deregulation.

You might want to ask Mr. Skully why he never told you about those memos on a day when you're going to be testifying before a subcommittee on that very subject matter.

Mr. FRAKES. Mr. Chairman, earlier you asked me the question regarding our delinquency contracts.

Mr. BURTON. Right.

Mr. FRAKES. I wasn't able to provide the answer.

As a result of the Keegan report, or the Air Force report, in which they recommended that we give some emphasis and attention to delinquency, we have implemented a procedure where we take a hard look on a monthly basis at all delinquent contracts.

Based on a criteria of 30 days, classifying those as delinquent, the number I recall—and I think it's accurate—is at the end of fiscal year 1977 we had about 8 percent of our equipment contracts that had met that criteria—that were delinquent.

Mr. BURTON. Thank you very much.

Thank you, gentlemen.

Mr. BOND. Thank you, Mr. Chairman.

Mr. BURTON. We will meet tomorrow at 9:30 a.m.

The hearing is recessed.

[Whereupon, at 4:20 p.m., the subcommittee adjourned, to reconvene at 9:30 a.m., Tuesday, November 29, 1977.]

# FEDERAL AVIATION ADMINISTRATION OPERATIONS RELATED TO SAFETY AND PROCUREMENT MANAGEMENT

TUESDAY, NOVEMBER 29, 1977

HOUSE OF REPRESENTATIVES,
GOVERNMENT ACTIVITIES AND
TRANSPORTATION SUBCOMMITTEE
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 9:45 a.m., in room 2247, Rayburn House Office Building, Hon. John L. Burton (chairman of the subcommittee) presiding.

Present: Representatives John L. Burton and Arlan Stangeland.

Also present: Miles Q. Romney, staff director; Bruce R. Butterworth, professional staff member; George Gudauskas, professional staff member; Elizabeth L. Wasserman, clerk; and Rachel Halterman, minority professional staff, Committee on Government Operations.

Mr. BURTON. The hearing will resume.

We will hear from Dr. Charles Billings, Chief, Aviation Safety Research Office, NASA. With him is Mr. E. Gene Lyman, Director, Aeronautical Man-Vehicle Technology Division.

Dr. Billings, as soon as the second member comes in, we will have both of you take the oath. We will issue that after you begin so you will be sworn as to what you have told us all morning.

Today's hearing is on aviation safety. There are two issues. The first is the "see-and-avoid" concept—as old as flight itself—being utilized by FAA to a great degree, and the second is the FAA's view of how airline safety might be impacted by economic deregulation of the industry and how it will affect FAA safety-related duties.

Please proceed, Dr. Billings.

## STATEMENT OF DR. CHARLES E. BILLINGS, CHIEF, AVIATION SAFETY RESEARCH OFFICE, AMES RESEARCH CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; ACCOMPANIED BY E. GENE LYMAN, DIRECTOR, AERONAUTICAL MAN-VEHICLE TECHNOLOGY DIVISION

Dr. BILLINGS. Thank you.

Mr. Chairman and members of the subcommittee, at the National Transportation Safety Board hearings which followed the crash of TWA Flight 514 near Dulles Airport in December 1974, it was learned that another airline flight crew had misinterpreted an approach clearance in just the way that the TWA flight did. The

information had been reported under a confidential, nonpunitive safety reporting system developed by an air carrier in order to improve the flow of safety-related information between its pilots and management.

Mr. BURTON. Excuse me. Will you both stand and raise your right hands? Do each of you solemnly swear that the testimony that you are about to give before this subcommittee is the truth, the whole truth, so help you?

[Chorus of two "I do's."]

Dr. BILLINGS. The belief was expressed at the NTSB hearings early in 1975 that such a reporting system at a national level might well be a useful safety tool. The Federal Aviation Administration, which is ultimately responsible for insuring the safety of air transportation, acted quickly to implement a confidential aviation safety reporting program. The new program was announced in May 1975. Operating under direct control of the Administrator, a small group of FAA safety officers carefully screened and initiated action, where appropriate, on some 1,500 reports during the following year.

It quickly became apparent, however, that despite stringent safeguards of confidentiality in the FAA program, many segments of the aviation community were extremely uneasy about reporting possible incriminating occurrences to the agency responsible for enforcement of the Federal Air Regulations. For that reason, and in order to enhance the flow of possibly useful safety data, the FAA asked the National Aeronautics and Space Administration if it would be willing to act as a neutral third party to receive, process, and analyze aviation safety reports. After consultations with many segments of the aviation community, NASA agreed to implement an aviation safety reporting system.

The ASRS, which began operations on April 15, 1976, accepts reports from any person who has observed or been involved in an occurrence which in his or her view demonstrates the presence of an actual or potential hazard to air safety. The system is designed to provide timely information regarding possible deficiencies or discrepancies in the national aviation system.

ASRS liaison with FAA is through the office of the Assistant Administrator for Aviation Safety which provides a major part of the funding for the system, and which follows through on all hazard reports. The system is directed by Ames Research Center's Aviation Safety Research Office. Oversight and guidance on the reporting system are provided by an advisory subcommittee whose members represent all segments of civil and military aviation, the FAA, and the public.

The ASRS thus represents a unique, totally cooperative effort by the entire U.S. aviation establishment to provide early warning of possible problems so that timely preventive or corrective actions can be taken to improve air safety.

The aviation safety reporting system is a voluntary system. Pilots, air traffic controllers, and others in aviation are encouraged to report occurrences which they feel represent a problem. In 19 months, approximately 9,000 reports have been received. The quality of these voluntary reports has been high; the cooperation of FAA and the aviation community has been outstanding.

It is important to note that the ASRS is not an investigative system. The information contained in reports is evaluated carefully by experts, but the confidentiality requirements of the system prevent us from obtaining verification. Our information describes the perceptions of individuals as to problems in the aviation system. These perceptions are often illuminating, but they may or may not be correct. Bulletins and reports prepared by ASRS, therefore, describe possible, but not proven, hazards. These reports are disseminated to those who are in a position to investigate, verify, or refute the existence of an alleged hazard and take appropriate corrective action if it is called for.

Over 50 percent of the reports received to date by ASRS involve human error in aviation. We know from countless studies of aircraft accidents over the years that human error is at least a contributory factor in from 70 to 90 percent of them.

Because of the ASRS structure, incorporating confidentiality, and a limited waiver of disciplinary action offered by FAA, individuals working in the national aviation system are both permitted and encouraged to report occurrences involving errors. Because they have learned that the system is "safe," they are able to discuss these errors truthfully; and there is abundant evidence that they have done so. Though their reports may involve their perception of a situation rather than the actual situation, it is their perceptions which are the basis for their decisions and subsequent actions. If the perceptions are wrong, the actions are likely to be wrong.

The aviation safety reporting system thus provides a unique way of looking at the aviation system through the eyes of those who work within it. It provides a mechanism for uncovering misperceptions, misunderstandings, and areas of ambiguity in the aviation system. Once such misunderstandings, misperceptions, or ambiguities are uncovered and analyzed, we can begin to understand not only the way errors are committed but why they are committed, and therefore how to take preventative action to keep them from happening again.

The ASRS thus has the potential to provide the FAA and the aviation community with data which will permit them to get at the roots of problems which threaten air safety, and thus to work out rational and effective solutions of these problems.

The study I have been asked to discuss with you today represents an attempt to provide just such data and assist FAA in its difficult task of maintaining the highest possible level of safety in increasingly crowded terminal airspace. The study was published in our fourth quarterly report which was distributed late last month.

Early scans of ASRS data base entries indicated that a substantial portion—something over 50 percent—of reports concerned occurrences in terminal airspace. In the first 2,300 reports entered in the data base, 360, or 16 percent, reported occurrences in terminal control areas or terminal radar service areas. Examination of these reports showed that many of these did not relate specifically to the radar service operations environment. One hundred thirty-six reports, however, were relevant to the specific rules and operating procedures which govern flight and air traffic control operations in terminal control areas and terminal radar service areas.

A major difference between these two classes of terminal airspace is that in terminal control areas all air traffic operates under air traffic control, regardless of weather; whereas in terminal radar service areas, participation in air traffic control by aircraft flying under visual flight rules is voluntary. Stage III radar services and separation between participating aircraft are provide in both types of airspace.

Thus, in a terminal control area, all aircraft entering the area are required to contact air traffic control, to request a clearance, and to obey the instructions of their controller. In a terminal radar service area, a pilot flying under visual flight rules may elect not to receive radar services, either by refusing such services or simply by not communicating with air traffic control unless he is going to or from a controlled airport in the area.

Our data indicated that many of the 136 reports relevant to those operating rules also involved a reported conflict between aircraft. About 70 percent of the reports involved a potential conflict; 38 percent involved a near midair collision, which we defined as an encounter involving an estimated miss distance of 500 feet or less, or an encounter in which evasive action was required or in which there was no time for evasive action. These numbers must be seen in perspective; they describe something under 100 potential conflicts in 6 months in terminal areas which handled roughly 64,000 aircraft per day. Nineteen of the reports involved an inability by air traffic control to visualize conflicting traffic, or a failure by air traffic control to point out that traffic. Reports were received from 18 of 21 terminal control areas and from 40 of 75 terminal radar service areas. Twenty reports involved an aircraft which had entered a terminal control area without a clearance. About half of the reports were thought to be primarily associated with aircraft or pilot factors, one-third with air traffic control or controller factors; the remainder were associated with equipment and airspace or environmental factors.

Each of the 136 reports was carefully examined in an attempt to discern what system or human factors might have been involved. Some of the occurrences, indeed many of them, involved human error; but the question facing us was why these errors and occurrences had happened, not with placing blame for them.

Looking first at aircraft and pilot factors, we found one or two cases in which it was clear that a pilot was deliberately circumventing the rules of the system. There were three other cases in which pilots, after contacting air traffic control, simply continued on course in expectation of a clearance into the terminal control area which for some reason was not forthcoming. In several of 26 cases involving terminal radar service areas, the pilot apparently did not wish to participate in radar services. In three other cases, pilots entered a terminal radar service area under control of air traffic control, then canceled their flight plans and refused further radar service in order to save time getting to their destination airport. Controllers have remarked that this leaves them with the sometimes difficult task of replanning traffic flow on short notice to take account of the movements of the nonparticipant aircraft.

Another factor in certain areas was pilots whose comprehension of English was limited. These pilots are sometimes unprepared for

the complexities of terminal area operations controlled in a language with with which they are unfamiliar. Three cases were reported in which this was a factor.

The problem of nonparticipating aircraft was a factor in 50 of the 136 reports in this study. The problem of the nonparticipant is quite different in the two classes of terminal airspace, however.

Terminal control areas are prominently identified on both visual and instrument charts; separate TCA charts are published and easily available. Rules governing aircraft operation in terminal control areas are codified in the Federal Air Regulations and summarized in the Airman's Information Manual. It seems reasonable to believe, therefore, that most pilots are aware to some degree of the restrictions that apply to all such areas.

Terminal radar service areas, on the other hand, are not identified as such on visual or instrument charts. While their presence is noted in part 3 and their limits are shown graphically in part 4 of the Airman's Information Manual, without immediate access to these documents it may be difficult for pilots to know whether a given terminal area does or does not provide stage III radar service.

Further, during visual meteorological conditions, terminal radar service areas may contain three types of air traffic: participant aircraft operating under instrument flight rules, participant aircraft operating under visual flight rules, and nonparticipating aircraft operating under visual flight rules.

In this respect, terminal radar service airspace is exactly like all other low altitude airspace with radar coverage except terminal control areas; under visual meteorological conditions, the three categories of aircraft may coexist anywhere in terminal or en route airspace, and radar advisories may be provided to VFR aircraft on request, workload permitting. Safety advisories are routinely provided to aircraft under ATC control if the controller becomes aware of the potentialy unsafe situation.

Because terminal radar service areas are relatively busy hubs, and because participation in radar service is encouraged, the number of participating aircraft may be larger than in other airspace. But the number of nonparticipants may also be considerable. As in other controlled airspace, such nonparticipants may or may not be known to air traffic control.

Controller factors in eight occurrences reported to ASRS included high workloads, inexperience or lack of familiarity, and misunderstandings; these factors bear a remarkable similarity to factors in incidents involving primarily pilot factors. Coordination problems were relatively uncommon in this study, occurring in only four cases. Inability to visualize a primary or nontransponder target on radar was a problem in several reports.

The configuration of airspace in terminal control areas appeared to influence considerably the behavior of pilots using, or avoiding, the terminal control areas. The design of airspace in such a way that it meets the needs of all users can be extremely difficult, particularly in the face of geographic constraints and multiple hub airports. Four types of airspace boundary problems were reported: those involving corridors through TCA's, those involving aircraft overflying the upper boundaries of TCA's, those involving geo-

graphic constraints at the lateral boundaries of TCA's, and those involving the close proximity of hub and satellite airports. Fourteen reports were cited in which boundary problems were thought to be relevant factors.

Equipment factors in these occurrences related primarily to radar and the associated computer systems. The most frequent citation—12 reports—was inability to make or maintain contact with primary targets. Radar failures were mentioned in two reports, an environmental problem which degraded radar imagery in one; computer problems were cited in 10 other reports.

While the air traffic control system has backup modes of operation designed to compensate for the various types of equipment problems which can occur, the reliability of the radar and computer equipment tends to place the controller at a disadvantage when a failure occurs, especially if it is a subtle failure. Controllers, like pilots, learn after a time to rely on the continued correct functioning of devices that usually function correctly. This places them at a disadvantage for a short time if the equipment fails. Perhaps more important, their level of alertness respecting subtle failures is lowered after a long period without them. Man does not function well as a monitor when he must look for events with a low probability of occurrence.

Two types of problems related to ATC policies and procedures were identified in these data. The first relates to air traffic control procedures for handling VFR aircraft in terminal radar service areas. Pilots flying under visual flight rules are required to comply with all Federal Air Regulations and to advise controllers if compliance with an air traffic control instruction would cause them to violate a regulation.

It has been pointed out to us that at night or in limited visibility conditions, a pilot may not be able both to maintain an assigned heading or altitude and also to maintain legal and appropriate terrain and obstruction clearance. When this problem regarding a specific terminal control area was described in FAA, the agency took prompt corrective action. It subsequently reported to us that this matter was under further review for possible national application of revised procedures for the handling of VFR traffic in terminal control areas.

The other problem relating to policies and procedures is a more subtle one. It appears, from the reports submitted to ASRS, that some of the limitations of the radar services program are not well understood by at least some aviators. Pilots do not understand some of the constraints governing the provisions of such services, nor the limitations of the radar equipment itself. Pilots of aircraft operating under instrument flight rules in particular do not understand why point-outs of a potentially conflicting VFR aircraft are not routinely given them. They have no way of knowing, of course, whether such an aircraft is a participant, or even whether it is visible to the controller handling their flight.

Similarly, it appears that at least some controllers are uncertain as to the intent of the basic policies governing terminal radar services. They may lack an appreciation of the problems facing a pilot as he looks for a target which has been pointed out to him;

they may also not understand how much a radar point-out can assist a pilot under high workload conditions.

On the basis of the data reviewed during this study, we believe that many of the problems associated with operations in terminal radar service areas and terminal control areas relate to the timely transfer of accurate information to and among those who must make the system work.

We believe that existing methods for the dissemination of information regarding TCA and TRSA boundaries and procedures are not optimal and that a study of available methods for disseminating such information might be useful.

Finally, we believe that a better understanding of the rationale, policies, and procedures for the use of terminal radar services by both general aviation and air carrier pilots would enhance the safety and effectiveness of the system. In particular, we think a better understanding of why the system works as it does, and of its limitations, would be of benefit. Air traffic controllers also need to be fully aware of the rationale and methods of terminal radar services, and of the needs—and problems—of all classes of pilots who may utilize airspace designated for these programs.

In summary, these ASRS reports represent the perceptions of pilots and controllers as to problems in terminal radar service environments. We have attempted to illuminate possible human and system factors associated with these occurrences in the hope of gaining a better understanding of why they happened. We do not receive reports regarding the thousands of flights which operate daily in these environments without incident, nor did the FAA expect to receive such reports when it designed the aviation safety reporting program. Instead, it was the agency's hope that it might uncover small problems in the aviation system before they became big ones with serious consequences, and that is exactly what we in NASA and our colleagues in FAA are trying to do.

Thank you.

Mr. BURTON. Assuming someone reports to you in strict confidentiality, although you are really trying to find out why something happened, you are not really interested in—and it is not your duty to punish the wrongdoer. Is that right?

Dr. BILLINGS. That is correct.

Mr. BURTON. How do you report this to FAA without them figuring out exactly——

Dr. BILLINGS. We do not report incidents in identifiable——

Mr. BURTON. OK, fine.

What would happen if you came across an incident caused by really gross negligence? Or, no matter what you find, are you just like a priest or confessor? I am serious. Do you ever find yourself in conflict where really you feel you ought to inform the FAA because there should be some specific investigation or disciplinary action? If you did that even once, wouldn't it destroy the credibility of the ASRS system?

Dr. BILLINGS. Let me speak to it this way. We do not attempt to evaluate whether negligence or carelessness or reckless flying is involved in reports. The only types of reports which are forwarded in identifiable form are those involving aircraft accidents. Those are forwarded to the NTSB and to FAA because they have a

specific statutory mandate. Also reports involving possible Federal crimes—violations of title 18 of the United States Code—are forwarded to the Department of Justice and the FAA for further investigation.

In other cases involving the Federal Aviation Regulations, we have been specifically mandated to consider all such reports in exactly the same way. All such reports are identified promptly after we have made a determination of whether we need to talk with the reporter further—all such reports are considered a part of the aviation safety reporting system's data base thereafter. They do not remain in our system in identified form.

Mr. BURTON. Do you have a rough idea of the percentage of aircraft operating within TRSA's that don't participate within that control system?

Dr. BILLINGS. I believe Mr. Bond's statement contains some information regarding this.

Mr. BURTON. How can you better inform the aviation user of the various aviation safety procedures they should follow?

Dr. BILLINGS. I would prefer to let the FAA speak to that, if I may. The only method we have is to try to identify problems.

Mr. BURTON. You raised it in your statement. But, in other words, you're saying you don't want to intrude; that that is for the FAA to do and you don't want to second-guess them right now.

Dr. BILLINGS. That is correct. It is not the mandate of the aviation safety reporting system to make recommendations for corrections.

Mr. BURTON. I was just asking for an opinion. You wouldn't even feel comfortable doing that—you'd feel that you are moving out of your——

Dr. BILLINGS. We feel that it needs to be done.

Mr. BURTON. Do you have any ideas on how it might be done?

Dr. BILLINGS. There is a variety of methods that the FAA has for getting to both general aviation and air carrier pilots. I think they are better qualified than I to speak to this.

Mr. BURTON. If they were doing it, you couldn't even raise the point, could you?

Dr. BILLINGS. They are doing it. They have an extensive airman education program. What we are highlighting is certain specific misunderstandings which may need to be emphasized in such programs.

Mr. BURTON. Does it make any sense for the controller to either see his target or be able to talk to the pilot? Shouldn't this be some kind of a requirement in the TRSA's?

Dr. BILLINGS. We know that it is very important that the controller have adequate information regarding the three-dimensional position of all aircraft within his sector in terminal radar service areas.

Mr. BURTON. How do they do that when many of, especially, general aviation planes aren't equipped with a transponder.

Dr. BILLINGS. There are two ways that information can be transferred to the controller. One is by use of an encoding transponder. The other is by verbal communications. The pilot can tell him where he is and what altitude. He can gain the information in either of those ways.

Mr. BURTON. That is assuming that there are enough controllers at that airport, and they have time to be communicating in this way and to be watching equipment. I think two or three times throughout your statement, which was an excellent statement, you talked about "workload permitting."

Dr. BILLINGS. Yes.

Mr. BURTON. What does "workload permitting" mean—that there are enough controllers to handle the flights?

Dr. BILLINGS. No; it does not.

The giving of advisories to aircraft respecting other aircraft which may become a potential conflict for them is an additional service provided by the FAA air traffic controller. That is what is to be performed on the workload permitting basis. It is not optional for the controller to do this; it is mandatory if his workload permits him to.

Mr. BURTON. Well, that's what I am saying. If you have two people instead of one, maybe with that workload there would be time for somebody to think about draining the swamp as well as hitting the alligators in the head. [Laughter.]

Dr. BILLINGS. We have to consider two things here. The first is provision of separation in terminal radar service areas and that is not an additional service. The provision of separation to participating aircraft is a mandatory service. That's the whole name of the game under stage III radar services. The provision of traffic advisories specifically, as opposed to separation, is an additional service. As I indicated, that is not optional on the controller. It is merely a matter that is something that is of less importance than the provision of separation.

Mr. Belanger can speak to this with considerably more expertise than I, but that's my understanding of it.

Mr. BURTON. It is mandatory that he do it, but he doesn't have to do it if he is too busy doing priorities A and B.

Dr. BILLINGS. No. It is mandatory that he provide separation by one means or another for the participating aircraft under his control.

It is not mandatory that he provide pointouts to them of all other aircraft in their vicinity unless, in his opinion, they represent an immediate hazard.

Mr. BURTON. Then he has time to be aware of that and do that?

Dr. BILLINGS. Yes.

Mr. BURTON. But it would be very desirable if all controllers had time and ability to do that and if all planes coming in knew that?

Dr. BILLINGS. Yes, it would certainly be desirable to do so if possible.

Mr. BURTON. It probably wouldn't be possible all the time unless there were either more sophisticated equipment or a few more controllers.

Dr. BILLINGS. I think Mr. Belanger can speak much better than I to the question of present workload.

Mr. BURTON. I am not an expert on controllers. I am not an expert on much, but I do know that one person can only do so many things at one time. If something is mandatory, you are going to do that first and if something is desirable, you'll do that afterwards.

One person can do only so much work.

Dr. BILLINGS. Right. I think that is exactly what the FAA had in mind when it set up a schedule of priorities for the services the controllers would provide.

Mr. BURTON. Right. But under some of the circumstances, I imagine, it would be difficult to get down to the desirable one when they are fighting very hard to get the mandatory items accomplished.

Do you think it would make sense to require some type of transponder equipment on all aircraft?

Dr. BILLINGS. I've got to answer that question by attempting to define the problem. The problem is to provide information on position and altitude to the ground facilities. This isn't only true in terminal areas.

How can this be done? It can be done either by transponders or by verbal communication.

What will be gained by transponders or more effective communications? Better information for the controllers, and therefore better services to the participants.

Mr. BURTON. Therefore better safety odds.

Dr. BILLINGS. That is only true if we take full account of the possible side effects of this.

If more transponders are found to be a viable solution to this problem, we have to ask whether their addition to the system can cause new problems—possibly more severe ones than the ones we are trying to solve.

The various components in this aviation system are highly interdependent and changing one almost always shows up as a new problem in another.

The questions that I would have to ask before I could answer that question adequately would be these: First, if we decide that we are going to require more verbal communications with the controllers, can the controllers handle an additional verbal communications load? They are already heavily loaded in some areas.

Mr. BURTON. My immediate gut reaction would be no.

Dr. BILLINGS. If we go to transponders, can the controllers make effective use of the additional visual information, or will there be so much scope clutter that it will make their tasks more difficult or overload them?

If they do, they will simply tune information out because man has a limited channel capacity.

Mr. BURTON. So then we add another man.

There is a school of thought that in certain areas there aren't enough controllers operating. When I say controllers, I really mean journeyman controllers, not students.

Dr. BILLINGS. That one I really can't tell. The question has to be asked in terms of not a simple gadget. It has to be asked in terms of the effect of that gadget on the people in the system.

Mr. BURTON. And how would you implement it? In other words, assuming that was the law, how would you deal with the problems that would cause?

Dr. BILLINGS. Which that solution creates; yes, sir.

Mr. BURTON. Thank you.

Mr. Stangeland?

Mr. STANGELAND. No questions, Mr. Chairman.

Mr. BURTON. Mr. Butterworth?

Mr. BUTTERWORTH. Mr. Chairman, I would like to read a few sections of the ASRS Fourth Quarterly Report just to give us an idea of the type of situation we are dealing with.

One of the problems Dr. Billings mentioned was that due to the way certain terminal control areas are configured, commercial airliners departing at high altitudes and high speeds with a busy workload in the cockpit have a difficult time seeing general aviation aircraft. You provided one example of this in your report and it says:

> Airline aircraft A was on vectors heading 360° assigned by O'Hare Chicago approach control and descending from 7,200 when a co-pilot noticed a light aircraft B at our two o'clock position westbound coming from over the lake at our altitude very close. Both aircraft banked to avoid striking. Estimate miss at approximately 100 yards. We were not given traffic information by approach control and asked them if they could paint the other traffic after the miss. They were unable.

Maybe you could explain that a little more. How significant is that type of report? Does that happen often?

Dr. BILLINGS. We have no way of knowing how often that happens. The aviation safety reporting system, because it is a voluntary system, cannot provide incidence data. It does not tell us how often something occurs in the aviation system, nor was it designed to. It was designed to try to ask why things of that sort happen.

These reports taken singly may or may not be significant. Taken in a group, as here, we may be able to dissect out more information about why those kinds of occurrences occur.

That one is one example of the VFR overflight issue which we have raised in the report. I really can't say very much more about it.

Mr. BUTTERWORTH. A commercial air carrier crew is very busy during departure from or approach into a terminal control area——

Dr. BILLINGS. That is true.

Mr. BUTTERWORTH. Their eyes are inside the cockpit.

Dr. BILLINGS. That is not necessarily true. They are very busy, yes.

I think what you are asking about really is the see and avoid issue.

Mr. BUTTERWORTH. That is what the hearing is about, yes.

Dr. BILLINGS. I would like just to say this. Our reports, as well as a great body of other evidence, speaks to it.

See and avoid has been and continues to be the primary method of separation assurance in most low-altitude airspace throughout the United States.

Mr. BUTTERWORTH. Pilots are supposed to have eyeballs.

Dr. BILLINGS. Right. It is an important aid to safety in all airspace including positive control airspace. Near midair collisions such as the one that you have just read, occur with some frequency. Actual midair collisions are rare. They are under 1 percent of all aircraft accidents and have been consistently.

Then there is quite a disparity between near midair collisions and actual midair collisions. One has to ask why. Many of the

potential conflicts described in this study were not more serious precisely because pilots did see and avoid other aircraft.

Mr. BUTTERWORTH. Yes. I understand that.

Mr. BURTON. Mr. Stangeland has to leave and I believe the only other witness for the day that was not already sworn in is Mr. Skully.

**STATEMENT OF LANGHORNE M. BOND, ADMINSTRATOR, FEDERAL AVIATION ADMINISTRATION; ACCOMPANIED BY RICHARD F. SKULLY, DIRECTOR, FLIGHT STANDARDS SERVICE; RAYMOND G. BELANGER, DIRECTOR, AIR TRAFFIC SERVICE; AND DAVID SHEFTEL, DIRECTOR, SYSTEMS RESEARCH AND DEVELOPMENT SERVICE**

Mr. BOND. Mr. Skully and Mr. Belanger will be testifying with me.

Let me add Mr. David Sheftel.

Mr. BURTON. All right.

Do each of you solemnly swear that the testimony that you are about to give before this subcommittee is the truth, the whole truth and nothing but the truth, so help you?

Mr. SKULLY. I do.

Mr. BELANGER. I do.

Mr. SHEFTEL. I do.

Mr. BOND. I do.

Mr. BURTON. You were already sworn in yesterday, Mr. Bond, so the left hand is all right. [Laughter.]

Thank you very much, Mr. Stangeland.

Mr. English will be coming in.

Mr. BUTTERWORTH. We were describing problems involved in departures out the top of TCA's. I assume that this same type of problem can be encountered laterally and underneath as well.

Dr. BILLINGS. Yes. There are potential interface problems at the boundaries between airspace controlled in this way and other airspace surrounding it.

Mr. BUTTERWORTH. I would just like to clarify again that in terminal radar service areas it is possible for an aircraft on visual flight rules to transit this airspace without radio communication and without a transponder. Is that correct?

Dr. BILLINGS. That is correct.

Mr. BUTTERWORTH. The controller is supposed to provide traffic advisories to all the aircraft under his control; that means, participant aircraft, workload permitting. However, because there isn't a transponder, he may only get an intermittent primary return on that aircraft.

Dr. BILLINGS. On this nonparticipant aircraft. That is correct.

Mr. BUTTERWORTH. He may have to tell a participant IFR or VFR aircraft "Hey Charlie, I've got someone 10 o'clock low—lookout, I don't know his altitude and I can't talk to him." That possibility is real.

Dr. BILLINGS. Yes, sir.

Mr. BUTTERWORTH. It has come up in your reports.

Dr. BILLINGS. Yes.

Mr. BUTTERWORTH. I would like to read one example. This is on page 17 of your report in the discussion of terminal radar service

areas. There is a lot of pilot terminology in here which is fairly confusing. I believe this is a commercial air carrier aircraft departing from Ontario Airport near Los Angeles. I'll begin here, paraphrasing:

> Communication was with Los Angeles Center at the time, the controller said he didn't see it—a small aircraft, a light twin general aviation aircraft—and apologized as other aircraft was on another code. Near mid-air was less than 200 feet. Evasive action was required.

Now he put two notes in here—

> NOTE.—This particular departure is one of the heaviest routes of air traffic in the U.S.A. Local VFR inbound and outbound VFR and IFR traffic into Los Angeles, LAX and a few other airports and many others plus military traffic use the departure route too. In five minutes after takeoff, besides flying airplanes, this departure required three radio frequency changes, four changes in heading, and three altitude restrictions. In the meantime they received several callouts of conflicting traffic to watch for.

That seems to be a fairly heavy workload for any pilot, and particularly since in that area the weather was 5 miles visibility, with smoke and haze. If anyone has lived in California, they know those conditions are typical.

Mr. BURTON. That is the Ontario area—south. [Laughter.]

Mr. BUTTERWORTH. It seems to me that—just from a layman's point of view—these are fairly dangerous circumstances. From what you have seen, would you agree with that?

Dr. BILLINGS. Once again I have to return to what I said in my statement. We have 136 reports, 95 of which related to potential conflicts between aircraft in 6 months, these areas accommodate from 64,000 to 65,000 operations per day.

There is no such thing as absolute safety. It is a matter of relative safety.

Is this a dangerous circumstance?

What you read is not a desirable circumstance, but it has to be measured against the tasks that must be performed for the number of aircraft in the area. I can't answer your question in absolute terms.

Mr. BURTON. Safety is the one thing that separates the FAA from the post office. It is desirable to deliver the mail in 2 days. But when we are dealing with safety and the FAA, something that is desirable is more important.

I think that "desire" then carries a stronger connotation than it would in the case of wishing to have the rural post offices open on Saturday.

Dr. BILLINGS. I think it has to be pointed out regarding the brief discussion we had on see and avoid is that see and avoid is not relied on totally in these areas. This is precisely why the FAA implemented terminal radar service areas and terminal control areas in an effort to provide a more effective primary method of separation assurance. See and avoid, however, represents a very important backup. It is what was effective in that particular instance and many others in our report. One of the reasons that the national aviation system is as safe as it is, is precisely because it has that kind of redundancy built into it.

Our study indicates that problems can occur when one relies too much on radar separation. This is one of the potential human factors problems. It is easy to assume that the controller is taking

care of you. I think therein lies the more subtle misunderstanding about the systems.

Mr. BURTON. I very much appreciate your testimony and I also appreciate the position in which you find yourself. I assume you not only have to keep the confidence of whomever it is who reports to you, but you also have a duty to send some information to the FAA. You don't want to inform on those who report to you, and you don't want to start second- or triple-guessing the FAA.

I think I had one more question and then we may have more we might submit to you in writing. Again, if you feel somehow that answering questions in the way they are put to you might, in effect, compromise your mission, you could let us know that. We can then discuss whether we would like the questions answered in the way they are put.

Thank you very much.

Rachel, did you have some questions?

Ms. HALTERMAN. I just wanted to ask about the radio communication—it is not required on the TRSA, right?

Dr. BILLINGS. Not unless the aircraft is entering an airport traffic area of a controlled airport.

Ms. HALTERMAN. In a controlled airport—but if they are nonparticipants, they do not have to radio. How much of a hardship would it be to require them to radio in to the tower?

Dr. BILLINGS. I can't answer that question, but I suspect the answer would vary for different terminal radar service areas. The question of hardship has to be asked two ways. How much of a hardship is it on the controllers who have to handle that additional verbal communications load and the question of hardship on the pilots who fly.

The vast majority of aircraft do contain radio transmitters and receivers at this point in time. This includes general aviation aircraft as well as air carrier aircraft.

Once again, whatever method may be taken to approach the problem of the nonparticipant, if it is decided that it is a problem that is handleable, must be assessed in terms of its consequences on not only the system itself but on operations or the people who make that system work. I would plead simply for consideration oriented along those lines rather than a simplistic solution which may well cause more problems than it solves.

Ms. HALTERMAN. That's all I have. Thank you.

Mr. BURTON. Thank you.

Dr. BILLINGS. Thank you, Mr. Chairman.

Mr. BURTON. I would like to make one last comment. Maybe the simplistic solution might cause more problems than it cures, but the problems that it causes may also be things that can be fairly easily cured.

Our next witnesses are Mr. Bond, Mr. Skully, and Mr. Belanger.

I want to return to the regulatory reform issue. On September 8, I asked you if you foresaw any problems for the FAA caused by airline deregulation. You replied that you didn't see any, or that what problems there were, were predictable. I asked if you had any knowledge of any memos or internal information dealing with this. You referred me to Mr. Skully, Director of Flight Standards Service.

Mr. Skully, I wonder why you didn't let Mr. Bond know of the reports you had received from your unit when Mr. Bond was about to testify on this very subject matter.

Mr. SKULLY. Mr. Bond was aware of the reports that I had requested. I verbally briefed him before the hearing.

Mr. BURTON. You did? I wonder why he didn't mention that to us.

Mr. BOND. Well, I guess I didn't remember it.

Mr. SKULLY. I might add that I didn't put too much credence in the data that you focused on relative to staffing.

Mr. BURTON. You don't put any credence on your evaluation staff. Now I don't know exactly what the evaluation staff does, but as I look at them they evaluate the programs and duties of the FAA. Their memo goes through a whole litany of concerns and talks about maintenance training. They talk about maintenance personnel. They say that maintenance of an aircraft and maintenance personnel usually require a very large outlay of money. Flight Standards has found it necessary to delegate more functions to industry because of the steady decline in the number of inspectors. This has worked well because carriers are prosperous but with the security of industry regulations being threatened they may revert to self-survival and side with the carrier on a crucial decision.

What does the evaluation staff do? They seem to be a very significant unit.

Mr. SKULLY. They evaluate the standards that we establish. They go to our field offices and to our regions to determine whether or not our district offices are complying with the instructions that we have issued. They have also been given a number of special assignments.

Mr. BURTON. They evaluate program performance, don't they?

Mr. SKULLY. That's correct.

Mr. BURTON. And safety is a major criterion of program performance.

Mr. SKULLY. In the last weeks of July, I was on leave. When I returned, it was August 1. I had been informed that we were going to have hearings on the impact on deregulation or the aviation safety problem. At a staff meeting on August 2, I requested my special assistant to collect data or opinions on issues that might have some bearing on deregulation. Obviously, the date of the memo that you are reading from is August 4. It was an off-the-top-of-the-head comment from a maintenance inspector who works for Mr. Clark. Mr. Clark is very competent and has an excellent background.

Mr. BURTON. Excuse me. So it's an off-the-wall comment—he doesn't know what he is talking about—he just wrote down some random thoughts.

Mr. SKULLY. That's the way I read it. Yes, sir.

Mr. BURTON. Then we will do away with Paul Clark. Who is Paul Clark?

Mr. SKULLY. He is Chief of the Evaluation Staff, Flight Standards Service. He signed the memo, but he didn't write it.

Mr. BURTON. He signs everything that is put in front of him?

Mr. SKULLY. Obviously he read it.

Mr. BURTON. And obviously agreed with it.

Mr. BOND. Mr. Chairman, the reason this event was not brought to your attention and not incorporated in our testimony was that the memorandum is wrong and mistaken. Senator Cannon, who is an expert on aviation and a pilot, said that regulatory reform and aviation safety—the issue is a red herring.

Mr. BURTON. We happen not to agree with that. As I said, the first thing about the FAA that alarmed me was when I asked: "Do you think you can handle all this new business because it is going to be different." The response was that there would be no trouble. One of your chief staff persons disagrees with Senator Cannon.

Paul Clark is the Chief of Flight Standards Service Evaluations Staff. He saw something. Senator Cannon, for whom I have the greatest respect, is the author of the bill. We don't say that deregulation means that planes are going to crash. We just feel that you ought to know that there are going to be some problems. Clark lists several, and he signed the memo. His job is to evaluate program performance and his statement is fairly heavy.

Look at some of the other memos. Your positions have been decreased by 260 since 1971 despite a continued growth in aviation activities. Any additional demands on the work could cause new staff. They have laid down how they are going to cut back.

Each part of your service, sir, raises that potential very strongly. They don't say they are going to need all these people. But they do raise that possibility. You sit here and act like it isn't going to be a problem while they disagree. If these people are incompetent, they all ought to be fired.

What's the bottom line in the memos? Increased need for new FAA manpower resources.

What's the other one? The General Aviation Division says that "if there were significant increases in applications, considerable impact on field resources would result. We are not staffed to cope with such an increase." Further down, they almost stipulate an expected increase and say that even an authorized increase in personnel would be largely unproductive in the near term due to the leadtime that it takes to start training them. This is the point that I raised.

"To reiterate, * * *"—and this is from another one of your groups—"the agency does not now have the resources to cope with the problems that sudden deregulation would present * * *. Considerable leadtime would be necessary in securing and training any additional personnel * * *."

Then from another memo, "Increased surveillance due to influx and rapid turnover of new operators." From yet another memo: "One area that may be affected is the planning and installation of new navigation facilities."

I was distressed by the fact that you didn't see these possibilities and that you were not planning for them. Even if we said you can hire everybody in the world, you would have to find and train competent people. You just seem oblivious to the fact that airline deregulation will necessarily cause an increased workload for the FAA.

Mr. BOND. Mr. Chairman, the evidence put before this committee that has been both supplied by the FAA and many expert wit-

nesses indicates that the workload that will come from regulatory reform is not excessive——

Mr. BURTON. That evidence came from you. It hasn't come from anybody else I know, and it certainly didn't come from your people. Now maybe they ought to be fired. Maybe they are incompetent.

Mr. BOND. It came from the FAA and it contained a most significant statistic which I did not bring before this committee yet, and I would like to bring it forward now.

Mr. BURTON. Do it.

Mr. BOND. The requirements for the FAA to certificate Southwest Airlines, which is part 121 all jet carrier, were precisely 1,700 man-hours. Less than 1 man-year of our inspector time was required to start from scratch a new jet airline. Now we have 2,000 safety inspectors in the field and it is crazy to think——

Mr. BURTON. How many are yours and how many belong to the airlines?

Mr. BOND. Those are our employees. They are in addition to the designated inspectors that are on the payroll of the various air carriers.

Less than 1 man-year to bring a new jet airline on stream. The notion that there would be any excessive demand on the FAA inspector forces as a result of regulatory reform, even if new airlines are formed and there is debate about that, is absolutely unfounded.

Mr. BURTON. All right. Let me read Mr. Clark who——

Mr. BOND. Mr. Clark is wrong——

Mr. BURTON. I think he knows more about it than you do, with all due respect.

Mr. BOND. He is untutored in the impact of the economic side of this bill. He said to Mr. Skully that he had not considered the legislation. He did not know what was in it——

Mr. BURTON. Let me just read his memo and we will see if what he says is so:

> Regulation reform or deregulation of aviation industry could cause an increase of flight standard safety workload efforts under the present FAA policy of delegation in the continued decline of FAA's inspector manpower.

Your people have been decreasing and we are letting the industry do it.

He talks about maintenance training. In order to be competitive with other carriers and ticket prices, the carriers could be expected to cut economic costs wherever possible. Anybody agree with that? Is that really an outrageous statement?

Mr. BOND. There is a difference between economic costs and safety——

Mr. BURTON. With that point right there, is there any doubt that they are going to cut economic costs wherever possible?

Mr. BOND. Every air carrier I know tries to reduce its costs to the minimized level. That is the American free enterprise system.

Mr. BURTON. Through past experience, he states that the first corner to be cut is maintenance training. Through past experience—maybe he dreamed that one up——

Mr. BOND. He is wrong. The evidence before this committee indicates that it has not been since 1962 as we submitted in responses to your questions, that there has been a safety problem

with a certificated part 121 carrier due to economic decline. Your questions specifically asked that point and every time there has been an economic decline or a merger or a reversal in this industry, the FAA has not been able to detect any decline in part 121 air carrier safety operations. They have cut other things. They have cut flight frequency. They have reduced operations. They have cut overhead, as Eastern Airlines has done, but in spite of our vigilance, it has been 15 years since we have detected any reduction in safety in certificated air carriers.

Mr. BURTON. Then why don't you fire this guy?

Mr. BOND. We are all entitled to be wrong, Mr. Chairman.

Mr. BURTON. When you are wrong, people could lose their lives.

Mr. BOND. My job is on the line——

Mr. BURTON. No; your job isn't on the line. If somebody's flying a plane his is on the line. You are in public service and taking this job, I'm sure at an economic sacrifice, to sit and hear me go up and down like a barometer—I'm sure that you're also sacrificing peace of mind.

Maintenance of aircraft and maintenance personnel are a large outlay and affected early in any economic pinch. He is making some strong statements and I would assume that you just can't dismiss this guy and say he's right because the legislator said it isn't an issue.

Mr. BOND. It's not because Senator Cannon is the author of the legislation. It is because Senator Cannon and his committee are recognized experts—many of them are pilots and knowledgeable in the field of air transportation and safety. It is their years of experience and expertise—not that they are the authors of this legislation—that gives them the ability to speak to this subject.

I want to go further to say that I have not dismissed Mr. Clark's memorandum. We have read it. We have examined it. It is wrong and the evidence is before this committee in its record that substantiates that.

Mr. BURTON. You didn't think it was a problem, and he said he didn't think it was much of a problem.

I'm not saying, and Mr. Walker, who was here, isn't saying that airline deregulation will decrease aviation safety. There is no reason in the world why economic deregulation should cause safety problems. But the fact that you don't think there is going to be any problem, or aren't geared up for that possibility, is what upsets me.

Mr. BOND. We are geared up, Mr. Chairman.

Mr. BURTON. How are you geared up? One of your people's memos say that with the continued decline in your own inspectors——

Mr. SKULLY. Mr. Chairman, may I say something here?

Let me go into the bureaucracy a little, which is probably an ugly thing to do. When I made the request, I recognized that we have various fraternities in FAA. We have various fraternities in Flight Standards. One of these fraternities is a group called general aviation operations inspectors. We have air carrier operations inspectors. We have air carrier maintenance inspectors. We have general aviation maintenance inspectors. We have avionics inspectors. I'll stop at that, but we have others.

I knew who wrote the memo when I read it. I knew it wasn't Mr. Clark; it was the maintenance inspector assigned to Mr. Clark's staff. He has had one field office assignment. He was at Washington National Airport for 6 years. He had been at headquarters for two. I had to consider what he said and why he said it. He is saying: I am a maintenance man and I feel the biggest problem in any issue relative to safety is maintenance.

I get the same answers from the operations inspectors. I get the same from the avionics inspectors. It is only natural to have a bias. In other words, everybody in every one of the areas sees a potential problem.

Mr. BURTON. You are saying that Mr. Clark would sign something he knows is wrong because this guy's got an ax to grind and he used to be an airline mechanic.

Mr. SKULLY. It is an opportunity to increase the number of people in the bureaucracy.

Mr. BOND. The issue here is not whether maintenance is important, Mr. Chairman. Everyone agrees with that. Mr. Clark is right.

The question is: What is the impact of regulatory reform? There is no evidence whatsoever to indicate that it will derogate safety in air carriage in any way.

Mr. BURTON. Well, I guess the best thing to do is to find out why Mr. Clark signed this. I assume that you have respect for him because he holds a pretty good position in the FAA. And you have increased that type of delegation.

I assume he puts his signature on something like this that he knows is just puffery. They talk about past experience. They talk about the possibility that many FAA functions could be delegated to the airlines. When the airlines are going to try to reduce costs under dereg you are going to rely on a guy who might lose his job by coming to you and telling you something because be is being paid by the airlines, rather than by the FAA.

What upsets me is that I really don't think you believe that it could happen—or that you aren't ready to see that it doesn't happen.

It doesn't have to happen. It really doesn't have to happen. But in my judgment it can happen with your attitude that it isn't going to happen—that its not going to be a problem.

Mr. SKULLY. At the last hearing in September, I commented that when we actually see what happens, if there is an increasing demand on our work force and we cannot handle it, then I will go to Mr. Bond and ask for additional resources.

Mr. BURTON. How long does that take in leadtime to get additional people in and train them?

Mr. SKULLY. Let me discuss that.

Mr. BURTON. I would like you to answer it.

Mr. SKULLY. I will.

These folks are talking about leadtime for 10 positions we are getting this fiscal year that will be general operations inspectors. They are being hired as trainees because we are trying to improve our minority hiring. It will probably be 2 years before we can use these 10 as journeymen. However, I can hire outstanding candidates as both maintenance inspectors and air carrier inspectors as soon as I have a need for them. They will be technically qualified

the day I hire them. They will go through 5 weeks of indoctrination to give them some of the basics on regulatory and enforcement issues. Then we can deploy them to use immediately. Two months after coming on board we can use them in the district office and get a full day's work out of them. Eastern Airlines, for example, has recently furloughed a number of their top engineering and maintenance personnel.

Mr. BURTON. Why is that?

Mr. SKULLY. They are cutting down on overhead.

Mr. BURTON. You just made the point. You just absolutely made the point.

Mr. BOND. Mr. Chairman, the point is not made by that. They were overstaffed. They are cutting back. There is no——

Mr. BURTON. No. They were not cutting back. They were on the shorts. They aren't making that kind of dough.

Mr. BOND. Mr. Chairman, the fact that there is a change in the staff size does not mean that adequate——

Mr. BURTON. Where do they come from?

Mr. BOND. Maybe they had too many people on the job doing not enough work. That is the conclusion that Eastern Airlines must have reached.

Mr. BURTON. They came from the very area we are talking about. There they are. You can hire them for safety because they understand it—they just got furloughed by Eastern because Eastern is perhaps in an economic pinch.

Mr. BOND. We do not dictate any specific level of overhead charges for an airline. We are primarily and solely interested in the safety product at the end of the line. It has been uniformly good with the American air carriers, including Eastern Airlines. They have also laid off surplus management people at the top level and all kinds of folks in many areas and there is no evidence that their safety record will be derogated with all of this. Maybe they have consolidated operations. You cannot quote the statistics without taking into hand the full picture.

Mr. BURTON. I agree with that, but it just seemed odd that you were saying that they wouldn't do that and here—well, maybe that is one place where you could hire all the personnel when they start cutting back on maintenance safety and people like that——

Mr. BOND. I was told here in my note from Mr. Belanger that most of the people who have left Eastern Airlines were staff or research and development folks and that they were not on the maintenance side.

Mr. BURTON. Well, I just said what he said.

Mr. BOND. Most of them.

Mr. BURTON. Research and development and what?

Mr. BOND. Engineering side.

Mr. BURTON. Engineering. Does that have to do with airplanes and whether they fly safely?

Mr. SKULLY. In the area he is speaking of, Eastern is going to rely more and more on the manufacturer in terms of how to extend life of various parts of their equipment and that sort of thing.

Mr. BURTON. Extended life in the equipment deals with safety, right?

Mr. SKULLY. Right—and economics.

Mr. BURTON. Yes. That is what I say, it may or may not—in other words, they cut back and rely on whoever builds for them.

Mr. SKULLY. Most companies do.

Mr. BURTON. I'm not knocking that. Its just that here at one level they even had their own people to make sure in an area——

Mr. SKULLY. It wasn't paying dividends.

Mr. BURTON. It wasn't paying dividends, but at one time they thought it was a necessity and they did it.

Does it pay any dividends for any airline to have safety standards above your minimum?

Mr. SKULLY. I read the testimony of all the folks that you had during the month of September. I think the point was made pretty clearly by the witnesses for United Airlines. They submit a maintenance plan to the FAA on a given aircraft. We either approve it or disapprove it. If we disapprove it, they modify it to our approval. So in reality, the maintenance level that they are maintaining their aircraft to is at our level. It is one and the same.

Mr. BURTON. I thought most of them are above your level.

Mr. SKULLY. That is the chatter you heard at the hearing in September. You heard a lot of things——

Mr. BURTON. I thought I heard that chatter even from you people.

Mr. SKULLY. No. You didn't hear it from me, sir.

Mr. BURTON. Although everyone says that the pilot is in control and can decide not to take up a plane, the law of the land under the circuit court of appeals, Federal court, is that the pilot—in this case, Mohawk's—isn't. He refused to take the plane up and was disciplined because the plane met your minimum regulations. I was intrigued by the FAA's interpretation of its own regulation that the pilot is the person who makes the sole determination of the safety and operation of the plane, but when he disobeys an order to take a plane up that regulation doesn't apply because the plane is not operating.

When an agency can make that type of argument, they can almost make any kind.

We will go into that. I guess that I can throw these memos away because they are self-serving. They don't mean anything. The guy that wrote it had his own ax to grind. Clark just signed it because he figured, "what the heck." The other people were looking for help and so the memos don't mean anything. They were so unimportant to Mr. Bond that he forgot when I asked him that you had mentioned them to him. They just seemed very unimportant.

Mr. SKULLY. I mentioned the one——

Mr. BURTON. Yes, you mentioned one, but there were five.

Mr. SKULLY. Yes, but the same theme was there in all of them.

Mr. BURTON. He thought they were so unimportant that he didn't even recall that you mentioned them to him. They were so unimportant to you that you just passed it on that you had the memos.

Mr. SKULLY. Yes. We have done something. I mentioned that before. As a result of these memos and other discussions, we plan to put together three teams to handle the certification if the workload comes upon us.

Mr. BURTON. You are talking about certifying new carriers?

Mr. SKULLY. That is correct.

Mr. BURTON. We are also talking about keeping track of existing carriers.

Mr. SKULLY. We do.

One of the witnesses commented that we had one maintenance inspector assigned to Eastern Airlines. I hate to pick on Eastern but we have five maintenance inspectors and one avionics inspector assigned there.

Mr. BURTON. I am not talking about the machinists or what somebody in the industry said. I am talking about what your own people said.

I am not talking about what any other witnesses said. You sent out a request "give us your feelings" and the feelings came back. They are at variance with what Senator Cannon and his committee said so therefore you dismiss them.

The strongest statement came from—as I look at your table of organization and equipment—the individual who would really be responsible for overseeing almost everything to make sure that things are going.

Mr. SKULLY. The most knowledgeable group is the air carrier division which also said some of those things.

Mr. BURTON. Yes.

Mr. SKULLY. They also agreed with Mr. Macy that most of the workload would be picked up or most of the routes will be picked up from the existing commuters.

Mr. BURTON. We are into two separate things. We will get off this, but we are going to definitely get back into it later.

You are talking about new commuter routes. These memos are talking about existing carriers who are going to cut down on the booze and the films which will be a great disappointment to me. They will probably cut down on the frills and they are going to cut down wherever they can so that they can make money in a price war. I'll miss a movie before I miss a hundred mechanics.

Mr. Clark's statement is that history indicates this will happen.

You know who really wrote it. That leaves me to believe that either Mr. Clark agreed with him or just decided to sign it because it didn't matter. You asked for answers. You got answers and every one of them, at one point or another, including Clark's which was the heaviest, raised strong potential issues of concern that seem to have some basis in commonsense, at least to me.

I don't think that economic deregulation should impact on safety. I can see where it could and I can see where you people really don't think it could because you think—what the heck—its a red herring. Senator Cannon and his committee said so. Have them write your staff memos instead of your staff. I guess you either didn't have time to read the memos or you figured that everyone of your staff who wrote these things is an incompetent, self-serving bureaucrat. If that's the case, you ought to get rid of all of them. It's either that, or they are really trying to tell you something. It can't be both ways. You either respect them and believe their judgment or they are just people trying to perpetuate the bureaucracy. If that's your opinion of them, they ought to be bounced.

I wanted to get that one on the table because I couldn't understand why Mr. Skully had not informed you about it.

So please proceed on today's testimony, Mr. Bond.

Mr. BOND. Mr. Chairman, I was on the brink of reading a statement to the committee on the subject of IFR-VFR mix and TRSA's and TCA's and with your permission I guess it would be appropriate to proceed with that now.

Mr. BURTON. You were notified that this was going to be brought up today?

Mr. BOND. Yes, indeed. We are quite prepared.

My understanding with your staff is that the see and avoid concept in the TCA's and TRSA's and the surrounding airspace is the main thrust of our hearing today.

These subjects have sufficient impact that they must be considered in the context of the total system. The U.S. aviation safety record is the best in the world, and we have progressively improved the record. For example, between 1966 and 1976, the total accident rate for domestic scheduled airlines per 100,000 aircraft hours flown declined by almost 70 percent; the total accident rate per million aircraft miles flown declined by more than 75 percent. Last year the United States achieved the lowest accidental total in the history of commercial aviation, and the fewest fatalities in more than 20 years.

This safety record has been achieved in an aviation environment that dwarfs the aviation activity of any other country in the world. For instance, about 90 percent of the world's general aviation fleet is U.S. manufactured; about 68 percent of the world's air carrier jets are U.S. manufactured. Chicago's O'Hare air operations approximate those of Rome, Orly Airport in Paris, and London's Heathrow Airport combined. Operations at Columbus, Ohio, about equal those of Tokyo and Athens combined. In fact 11 of the 12 busiest airports in the world in terms of air carrier operations are located in the United States. The only foreign airport in the top dozen is London's Heathrow which ranked eighth in 1976.

Let me quickly review the parameters of the system we're discussing, based on the most recent data available; 232.1 million air carrier passengers; 186.4 billion revenue passenger miles; 12,000 million ton-miles; 25,300,000 IFR aircraft handled by FAA air route traffic control centers; 66,500,000 operations at FAA towers; 30,700,000 IFR operations at FAA towers; 59,800,000 flight services; 13,400 U.S. landing areas; 744,000 FAA certificated pilots; 240,000 FAA certificated mechanics and flight engineers; 1,700 FAA certificated pilot schools; 3,500 FAA certificated repair stations; 140 FAA certificated mechanics schools; 181,000 U.S. registered aircraft, and 17,000 air traffic and air navigation facilities of all kinds including NAVAIDS and terminals and so on.

The FAA established terminal control areas with full cognizance of the U.S. safety record and with the determination to improve this record still further.

Although some of our critics would have us move faster, there are others—and I would include in that group Dr. Billings—who testified this morning before this committee as an impartial expert—with a more prudent view who believe, as I do, that the consequences of doing something hastily and wrong may be worse than doing nothing. Our national airspace system is a complex interdependent system, with interdependent components, which

often requires that painstaking, careful attention be given to all components when addressing a safety problem. You have my promise that we will move with all deliberate speed, but we cannot, and we will not, permit ourselves to be prodded by our critics into taking actions before they have been properly evaluated and tested. In this context, I have come to the conclusion that the multifaceted air traffic control system necessitates a problem-solving approach that first requires us to determine whether the "solution" to our problems is not the genesis of a different and perhaps much greater problem. It has happened in the economy, Mr. Chairman. The statement is as true in economics as it is true in air traffic control. You cannot do one thing without considering its impact on other elements.

We welcome and encourage diversity of opinion since it provides us with vital input with which to develop the balanced safety programs so necessary to the maintenance of a healthy air transportation industry. As I will discuss later on, I classify the NASA analysis of the aviation safety reporting system as a very healthy, constructive and professional effort to define problems so that we can fine tune the system.

I would like to turn now to a discussion of the see and avoid concept. Commonsense dictates that the see and avoid concept is a basic touchstone within our air traffic system. It is fundamental to it. This fundamental concept of separation has been repeatedly reviewed by the courts and accepted as a necessary and practical element of the air traffic system. Briefly, see and avoid requires the pilot of any aircraft to be watchful and vigilant for the presence of other aircraft which may present the possibility of a collision. Proceeding from this commonsense foundation, the FAA has greatly supplemented it with other procedures and requirements to increase its effectiveness.

The importance of the see and avoid concept is felt throughout the regulatory system of the FAA. Pilots are trained in identifying and reacting to collision potentials. Communications are required at all airports having a U.S. control tower. Efforts to reduce cockpit workload in terminal areas are ongoing. Rules of right-of-way create a predictable environment for seeing and avoiding other aircraft. Acrobatic flight is prohibited in control zones and in Federal airways. Pilots are prohibited from entering airport traffic areas except for the purpose of landing and takeoffs, unless specifically authorized by air traffic control. Where necessary, special air traffic patterns are prescribed to increase the ability of pilots to anticipate and see each other.

In addition, the FAA has taken actions in two basic directions to enhance the feasibility of seeing and avoiding. First, we have supplemented the see and avoid concept with extended control over more and more flight operations. This has been accomplished by progressively expanding positive control airspace, establishing terminal control areas and implementing expanded radar services in terminal radar service areas. Positive control airspace now blankets the United States from 18,000 feet to 60,000 feet.

In addition, terminal control area airspace surrounds 21 of our major airports handling large volumes of high performance passenger carrying aircraft. Pilots are required to obtain permission to

operate within these TCA areas. All aircraft operating within that airspace are provided positive separation by air traffic control as in the high altitude positive control airspace. Expanded radar services in varying degrees have been implemented at over 100 other airports, and traffic advisories are issued through the system. These actions, while considered by some to be an infringement on the right of freedom of transit of the Nation's airspace, were considered by the FAA and many others as essential to the safety of the flying public. Airline operations, therefore, are conducted, for the most part, in a controlled environment.

The second direction has been one of improving the usage of the see and avoid concept. This has resulted in increased—I repeat, increased—flight visibility and cloud clearance requirements as well as regulating maximum speeds below 10,000 feet.

As stated earlier, the concept of see and avoid is only one of the system's requirements used to avoid midair collisions. To enhance the ability to see and avoid, aircraft may not operate at a speed greater than 250 knots below 10,000 feet. This restriction on speed, coupled with the requirement that appropriate weather conditions exist before VFR aircraft are permitted to operate, helps assure that the see and avoid concept works. Additionally, above 3,000 feet, special rules govern VFR aircraft operations. The purpose of these rules is to provide altitude separation between uncontrolled aircraft by prescribing flight levels which differ depending on the direction of flight. Generally they are even 1,000 feet plus 500.

To operate above 12,500 feet, with rare exceptions, all aircraft must have an altitude encoding transponder which apprises the en route controller of aircraft position and altitude, thereby enabling him to provide traffic advisories and vector aircraft as necessary. As previously stated, above 18,000 feet all aircraft are under positive control.

The subcommittee has expressed particular interest in use of the see and avoid concept in TCA's and TRSA's. TCA's have proven to be a highly effective means of separating traffic in high density environments. By exercising positive control over all aircraft within a TCA, we have been able to reduce dramatically the numbers of near midair collisions within this defined airspace. For example, in group I TCA's, of which there are nine, statistics show that in 1968 before TCA's were implemented there were 242 near midair collisions reported to the FAA. At these same locations, only 12 were reported to the FAA during 1976. Of these 12, 7 involved an air carrier aircraft. In 1977 through June, eight near midair collisions at these locations have been reported to FAA of which five have involved an air carrier aircraft. With regard to group II TCA's, the less busy ones, of which there are presently 12, there were 15 reported near midairs in 1973 prior to group II TCA implementation; in 1976 there were 11 near midairs at these locations reported to the FAA. Of these 11, 6 involved an air carrier. Through the end of June 1977, four near midairs have been reported to FAA. Two involved an air carrier aircraft.

The FAA has also implemented terminal radar service areas which provide coverage for 102 airports within the United States. In a TRSA, VFR aircraft pilots are provided separation from other participating VFR aircraft and all IFR aircraft unless they specifi-

cally do not desire the service. The FAA urges VFR aircraft to avail themselves of this separation service, and our figures show that 92.4 percent of VFR arrivals and 84.4 percent of VFR departures do participate in this program. As Dr. Billings alluded to this morning, we have a very strong educational program to get the word out to pilots and it is clearly working, based on our statistics. This provides a large margin of safety in addition to that afforded by the see and avoid concept of aircraft separation.

Before proceeding further, I think it is helpful to take a look at the environment in which our near midair statistics have been generated. In the past 12 months, there have been 10 million aircraft operations within our 21 TCA's. Two million of these aircraft operations were controlled VFR aircraft. During this same 12-month period, there have been over 13.5 million aircraft operations within our TRSA's. More than 5 million of these operations involved VFR aircraft participating in the separation program. It is significant to note that, in the 5 years from 1973 through 1976, terminal operations increased 23 percent. At the same time our accident statistics are going down.

The most important statistic which should be noted is that in the almost 5 year period from 1973 to the present there have been no midair collisions involving an air carrier aircraft anywhere in the United States. On the other hand, in the 5 years preceding 1973, there were a total of 12 midair collisions involving air carrier aircraft. Something is going right in this system, Mr. Chairman. It speaks well for the work that has been done to reduce the hazards of midair collisions, particularly when you consider the growth in air traffic during that time. Just within the past 12 months, our terminals and centers have controlled more than 120 million aircraft operations with well over 720 million radio control instructions or clearances transmitted to pilots by our controllers.

Nevertheless, we are continuing to strive for improvements in reducing the number of near midair collisions that take place and, in turn, the possibility of midair collisions.

For example, TCA's are designed for high performance aircraft to exit and arrive through the top of the TCA, which, depending upon the TCA, ranges in altitude from 7,000 feet to 12,500 feet. Arriving and departing at this altitude reduces the mix of air carrier traffic and uncontrolled VFR traffic outside the TCA since most VFR traffic is at the lower altitudes. We are presently considering raising the ceiling for all TCA's to 12,500 feet as we have already done at the Atlanta TCA.

Also, within the last year we have initiated a high profile descent program which minimizes the exposure time of air carrier aircraft to a VFR mix by using procedures which keep the high performance aircraft at the highest possible altitude until it is close to its destination. One of the side benefits of that, hopefully, is that a great deal of fuel will be saved as well. In Atlanta, this has resulted in as much as a 50-percent reduction in time spent at altitudes below 10,000 feet by those arriving high performance aircraft.

The high profile descent program is being extended to all airports which accommodate large high performance aircraft. A further benefit which results from this program is that, by retaining

arrivals at a higher altitude until closer to the airport, departing aircraft can more expeditiously climb out of the terminal airspace, thereby reducing their exposure time.

I would like to turn briefly now to the mix of air carrier aircraft and uncontrolled VFR aircraft in the airspace surrounding TCA's and TRSA's. As I stated earlier, the concept of TCA's is for high performance aircraft to enter and exit through the top, thereby reducing their exposure to uncontrolled general aviation aircraft. If we do resort to rulemaking to raise all TCA ceilings to 12,500 feet, this would further reduce the possibility of exposure. Also, our high profile descent program will provide further reductions in the mix of uncontrolled VFR aircraft and air carrier aircraft at TRSA's as well as TCA's.

Although we have made substantial progress in reducing the potential of midair collisions, we are still not satisfied and will continue to seek ways to improve upon this record both through the continuing refinement of our air traffic control procedures and through our research and development efforts.

I would like to take just a moment to briefly point out a few of the other things the FAA has done recently that relate to the subject of this hearing.

Minimum safe altitude warning—we call it MSAW. This is a computer program which will alert the controller when a tracked aircraft with altitude reporting transponder in the terminal environment is, or is predicted to be, below a minimum safe altitude. MSAW became operational at all ARTS III facilities November 1977.

The expansion of Atlanta, Ga., terminal control area to a 35 mile radius and to 12,500 feet MSL was completed.

Positive control area in Alaska was lowered to 18,000 feet on April 21, 1977.

Conflict alert procedures for all centers were implemented on October 1, 1976—more than a year ago. It is working.

We began feasibility testing of automated terminal services which will provide approach and landing sequencing for nontowered airports.

We initiated development of the software to provide for flight plan conflict probe and resolution. This will automatically review flight plans and provide the controller with the data on possible conflicts and the actions to be taken to avoid a conflict—just on the basis of the flight plan.

The initial operational testing of conflict alert capabilities for ARTS III terminal area radar was initiated. That means that in the terminal areas the controller will be alerted to IFR aircraft entering a conflicting flight path with other computer followed IFR aircraft.

Development efforts to consolidate and prioritize warning system alerts, both audio and visual, in cockpits have been initiated. The program is designed to eliminate the varied types and locations of warning devices and provide the pilot with a single system which will place multiple warnings in priority and directions for correction.

An evaluation of the utility of heads-up display in approach and landing operations was initiated. The evaluation will establish what safety implications the use of such devices could have.

Let me conclude, Mr. Chairman, by saying that the joint NASA-FAA aviation safety reporting system is one of the management tools we use in taking a broad look at our system. Although the data is somewhat coarse, and I think it must always be since it is confidential, and a number of assumptions have to be made to put the data into context, we still have found the reporting system to be a helpful mechanism for assimilating as much information as possible about how our air traffic system is working.

Mr. Chairman, that concludes my prepared statement. My associates and I are available to answer questions that you or the members of the subcommittee may have.

Thank you very much for your attention.

Mr. BURTON. Thank you very much, Mr. Bond.

In your statement somewhere you state that there were approximately 240 near misses in 1968 and only 12 in 1976. At the time of the high figure FAA had an immunity program similar to NASA's. Do you give immunity now to someone who reports a near miss to you?

Mr. BOND. If someone reports a near miss to us, I believe the answer is no, but if it goes to NASA reporting systems, immunity is granted. Is that right, Dick?

Mr. SKULLY. That is correct.

Mr. BURTON. The figure 12 that you talked about—they were reported to you?

Mr. BOND. That was an FAA near miss report—that is right. We made the data——

Mr. BURTON. So, no immunity there, right?

Mr. BOND. No.

Mr. BURTON. So somebody might have figured they might as well keep their mouth shut. In other words, its somewhat of an apples and oranges comparison? Or maybe an oranges and tangerines comparison? I mean that the high figure was when they could report near misses with immunity and the low figure is when they could report the near miss and take their chances.

Mr. BOND. I think it is a valid point. The assumptions on all of the reporting systems have changed from time to time over the years.

Mr. BELANGER. I think you are on track there. It really was apples and oranges when you have an immunity program and a nonimmunity program so that—however, when you take the quarterly report of NASA on the same airspace, if my computation was correct, there were 22 near misses reported in TCA's and for the same period in 1968 the report was 185. So it is relatively close. I am encouraged to see with an immunity reporting program at NASA that it appears we are getting free reporting.

Mr. BURTON. In other words, you may not get everything but you understand that you get a more accurate number of near misses as opposed to under the system where you recorded 12.

Mr. BELANGER. That is correct.

I would like to make the point though. I am encouraged by the NASA report because when I look at the 6 months of the report,

NASA has a total of 9,000, and we never did get that number of reports during out total immunity program. I find that there are only 22 near misses reported, at least as far as I could find in this fourth quarterly report. This is opposed to 185 that were back in the 1968 report.

Mr. BURTON. Is that for the fourth quarter or is that for the whole year?

Mr. BELANGER. That is for a 6-month period.

Mr. BURTON. I see.

Mr. BELANGER. So, it indicates to me that our programs are effective.

Mr. BURTON. Your positive control in effect on your airplanes from 18,000 feet to 60,000 feet——

Mr. BELANGER. That is correct.

Mr. BURTON. Do most of the accidents occur under the 18,000 feet?

Mr. BELANGER. The midair collisions that occurred in the time referred to before, which was before the last 5 years, were for the most part below 18,000 feet.

Mr. BURTON. And you are thinking of dropping that 18,000 foot ceiling to 16,000 feet; as I believe I heard someone say.

Mr. BELANGER. No sir. We are considering dropping it to 12,500 feet.

Mr. BURTON. When they get below that 18,000, they must rely upon see and avoid?

Mr. BELANGER. They are into a see and avoid but that see and avoid airspace between 12,500 and 18,000 is enhanced by two requirements. One is that the minimum visibility be 5 miles instead of 3 miles and the second is that they must carry an operating transponder with mode C and therefore visible to the aircraft traffic control system.

Mr. BURTON. For air carrier aircraft?

Mr. BELANGER. No. That is any aircraft operating in that airspace.

Mr. BURTON. What would be the problem in dropping positive control down to the landing like they do in Canada and I think elsewhere.

Mr. BELANGER. I am not aware of anything like that in Canada. They still operate on see and avoid. In fact, they have less positive control airspace than we have.

The problem would be to determine where it is required and necessary. I think that gets into a little bit of our philosophies of what airspace and where do we need to enhance the see and avoid concept. See and avoid is still the major factor on avoiding collisions.

Mr. BURTON. Right. It is as old as time itself.

Mr. BELANGER. There are 700,000 pilots and roughly 170,000 aircraft, around 300,000 control operations a day, plus an unknown number of uncontrolled aircraft, and 12,000 airports in the country, only 425 of those with towers.

What is it that would cause a see and avoid concept not to work? That is what we have to look at. There is visibility, bad weather—if you can't see out in front of the airplane due to clouds, you can't see and avoid. So that is the first genesis of the IFR/VFR flight

rules. Therefore the 3 miles, 5 miles, 1,000 feet and 2,000 feet—definition of the instrument flight rules and visual flight rules.

Another thing is what else would prevent you from doing a good job of see and avoid? The speed of the aircraft—the ability to detect and then make a maneuver that would avoid collision after having observed the other aircraft. That is why we got into the positive control structure of 24,000 and later on 18,000 feet. Those aircraft are traveling somewhere in the neighborhood of 9 miles a minute and the ability to see and then take avoiding action based on the speed is not too good. Therefore we said this airspace needs protection and we got into the above 18,000 feet.

Where else do we have a problem? We say speed is a problem—the speed is related to the ability to detect and then avoid. We got into a speed rule that says below 10,000 feet where you get into the basic mix of VFR aircraft—the see and avoid type aircraft—we decided we had better slow the big boys down so they can see and avoid. So we enhanced the see and avoid concept that way.

Another factor is the density of aircraft in a given area. We say obviously, and it makes commonsense, that the more aircraft in a condensed piece of airspace, the more difficult it is to see other aircraft and avoid them because there are so many of them. Therefore, we got into the terminal control area program at the 21 locations and again we have positive control. As Mr. Bond mentioned, we are now considering bringing that terminal control airspace that contains the profile of the climb and descent of high performance aircraft up to 12,000 feet, which will abut our consideration of the bringing it down to 12,500 feet and therefore, the high performance aircraft will be contained in an area of protected airspace at our major locations.

Mr. BURTON. Mr. Bond, in your statement, you said: "If we do resort to rulemaking to raise all TCA ceilings to 12,500 feet, this would further reduce the possibility of exposure."

It's almost as if this is the last resort. Is it something you are loath to do?

Mr. BOND. No.

Mr. BURTON. You're probably going to do it?

Mr. BOND. We are considering it.

Mr. BURTON. What problems would there be in doing it?

Mr. BELANGER. We are a democratic society. We have a due process of notice of proposed rulemaking and——

Mr. BURTON. I am not talking about a dictatorship. I am talking about what's wrong with you proposing the rule.

Mr. BELANGER. I think we will probably propose the rule and put out a notice of proposed rulemaking. It is still a decisionmaking process within the agency. I haven't followed up completely with Mr. Bond yet.

Mr. BURTON. In all probability you will propose a rule and then go through the democratic process.

Mr. BELANGER. In all probability.

Mr. BURTON. It would only further reduce exposure to accident which is highly desirable.

There was a statement about not wanting to abridge the freedom to fly. In other words, there is no doubt in your mind that just as driving is a freedom but also a privilege—because you must be

licensed and can't be drunk—flying is a privilege which under law, can have certain restrictions placed on it by your agency without becoming a constitutional issue?

Mr. BOND. Yes, sir.

Mr. BURTON. After the establishment of groups I and II the TCA's—there are about 21 of them—the number of midair collisions fell. I understand that the initial concept of the TCA differs substantially from its present form and was much more restricted and safety-conscious.

Mr. BELANGER. I am not aware of the changes that were made. The only change that I know of was a change in the equipment requirements in the group II TCA's. At one time we were proposing a mode C altitude readout and eventually came out with rulemaking that required a transponder only.

Mr. BURTON. Then group III was dropped altogether, right?

Mr. BELANGER. I beg your pardon.

Mr. BURTON. Then group III was dropped altogether?

Mr. BELANGER. I don't think it was ever proposed in group III. I could refresh my memory on this because it has been some time.

Mr. BUTTERWORTH. As I understand it, the FAA's original grand design for terminal control areas was set out in a notice of proposed rulemaking dated April 15, 1972. As I read it, that proposes three groups of TCA's. It did contain a requirement for an altitude reporting transponder in group II's which was later dropped in 1975.

Mr. BELANGER. But no transponder at all in group III, as I recall.

Mr. BUTTERWORTH. Yes.

I will read: "Forty-two additional terminal locations equipped with automated radar terminal equipment and designated as terminal areas."

I guess there are group III TCA's.

Mr. BELANGER. That is correct.

Mr. BUTTERWORTH. "These terminals would be listed in a new sub-part * * * 8." They are listed here, Albany, Albuquerque, Baltimore—I see a lot of airports that instead became TRSA's.

Mr. BELANGER. That is correct.

Mr. BUTTERWORTH. At these locations a transponder was not to be required of an IFR or VFR flight being provided separation service. But altitude reporting transponder was to be required for all other flights in the area. What that says to me is that if you are controlled by the air traffic controller in group III TCA's you must have radio communication, and if you have radio communication, you don't need a transponder. If on the other hand, you're not controlled, then you must have a transponder. Correct me if I am wrong; that's the way I read it.

Mr. BELANGER. You are reading it correctly.

Mr. BUTTERWORTH. This satisfies the important commonsense notion Dr. Billings spoke to, and that point which we were trying to get at: The controller must be able to either talk to or see all traffic in his area. It just makes sense.

Mr. BELANGER. That's the reason it was written that way.

Mr. BUTTERWORTH. Then why was it dropped?

Mr. BELANGER. We have never promulgated the group III TCA's——

Mr. BUTTERWORTH. I know it is important on one of the——

Mr. BELANGER. We have never promulgated that rule because we went into the TRSA program which is a voluntary program, as you well know, to see to what extent that could be as effective as a TCA requirement. Fundamentally that is the reason why we have never promulgated group III. We have a notice of inquiry to the public out now asking what we should do. Should we proceed with group III or should we stick with the TRSA program?

Mr. BURTON. Are they mutually exclusive?

Mr. BELANGER. Yes, they are.

Mr. BUTTERWORTH. There is one other point in the April 15, 1972, NPRM I would like to read. It was apparently anticipated that the ceiling of the TCA's would extend up to the floor of the 12,500-foot positive control area. To quote:

> It is anticipated that in most cases the Group II Terminal Control Area and the terminal area airspace will ultimately extend upward to 12,500 feet to provide maximum protection for high performance aircraft, air carrier commercial, transmitting between in route mode C altitude transponder airspace and terminal airspace. In effect, this will eliminate airspace in which there would be unknown aircraft and will at the same time free much of the airspace around terminals for lower performance aircraft.

In other words, it would eliminate the need of "see and avoid" except as a backup system. You would no longer use see and avoid as the primary system.

Mr. BELANGER. We could get into a great debate about this.

Mr. BUTTERWORTH. What I am saying is that this was the original concept. Mr. Bond said that you might consider this and issue an NPRM to implement this concept. It was an NPRM in 1972.

Mr. BELANGER. Not the raising of the——

Mr. BUTTERWORTH. The NPRM referred only to group II and III.

Mr. BELANGER. Group II and III was an enabling document. The airspace configuration of each TCA is done on an individual piece of rulemaking so that the boundaries of that airspace is done on a case-by-case basis.

Mr. BUTTERWORTH. OK. That makes sense but you did declare your intention to increase the height of TCA's.

Mr. BELANGER. We were announcing an overall plan concept, if you will.

Mr. BUTTERWORTH. All right.

Mr. BELANGER. That was an enabling document that provides basic enabling rulemaking to move as we did at Atlanta, going up on a case-by-case basis.

Mr. BURTON. Where has this "see and avoid" concept been reviewed by the courts and accepted as a necessary and practical element of air safety management? That is in Mr. Bond's statement.

Mr. BELANGER. It has been in litigation cases where the Government has been sued alleging that the see and avoid concept is not adequate and the courts have found in our favor.

Mr. BURTON. I wouldn't mind getting copies of that. I am fascinated with FAA court decisions. If they are decisions, I would love to see them.

Mr. BELANGER. We would be happy to send them over.

Mr. BURTON. I would love to, at some later time, find out who the attorney was who was so intelligent to say that the pilot is not

operating the aircraft if he hasn't taken off. I wouldn't even raise that point in a moot court argument.

In 1971 there was a midair collision between a Hughes Air West DC-9 and a Marine Corps Phantom. In the accident report the National Transportation Safety Board recommended then, as it has done repeatedly, that the FAA should establish climb and descent corridors extending from the top of the TCA to the base of the positive control area—the 18,000. FAA responded that their plans were to expand existing TCA's by adding circular airspace up to 12,500 with an approximate radius of 35 nautical miles from the prime area airports. This intention was announced in the grand design for the TCA's carried in that notice in 1971-72. You just did this in 1977 for Atlanta. You say you still have this requirement under consideration.

We realize that one of the underlying feelings of the present FAA is that they will not be pushed into hasty action by any of their critics. I think this is laudable. I don't like to be pushed into things that I even want to do. But, aren't we moving a bit slow?

Mr. BELANGER. I guess you might say deliberate. We took the 12,500——

Mr. BURTON. With all deliberate speed, right. There are still blacks trying to get into school someplace and that was settled in a 1954 decision by the Supreme Court.

Mr. BELANGER. Well, getting back to aviation, we wanted to find out what the impact is on the agency and the user of going up to 12,500 feet. Can we handle it? How do we handle it? What is the impact? We went into a test plan in Atlanta, although it was finally promulgated as a permanent rule in 1977. We tested out the concept in Atlanta for about 1½ or 2 years to ascertain what this impact would be. Yes, maybe that is a little slow to do it, but we moved approximately 3 years ago with the test plan and we are satisfied that the test was a success. We converted it into permanent rulemaking this year.

Mr. BURTON. Would it help the "see and avoid" concept if the aircraft had lighted strips, something like bumper strips, on their wings, tips or tails to make them stand out?

Mr. BELANGER. You are in Mr. Skully's area now.

Mr. SKULLY. We are using landing lights on aircraft below 10,000 feet within the congested terminals where we operate. This helps the pilots to see and avoid. Most of the new aircraft today are coming off the assembly line with strobe lights. It is not a requirement that they do, but they do.

Mr. BURTON. What is easier to see—an orange flash or a light during the day?

Mr. SKULLY. My observation, and that of others, has been that a flashing, high-powered light is best. It is amazing how the landing lights stand out even in the bright daylight. You may notice all the aircraft coming down the river here in the Washington area. At whatever altitudes they are flying, and regardless of the time of day, they operate with their landing lights on.

Mr. BURTON. It is not a requirement?

Mr. SKULLY. We have issued that as an air carrier bulletin, which is not a mandatory thing. There are some aircraft that you can't have landing lights on unless the landing gear is down.

Mr. BURTON. How about giving them an option of a landing light or a distinctive marking or coloring? Something that might help.

Mr. SKULLY. I think the strobe light, which is extremely bright, does that.

Mr. BURTON. I am aware of that, but that is optional. For aircraft that can't have their landing lights on unless the landing gear is down, and for those that aren't equipped with strobe lights, what would be wrong with saying if they cannot do this, they must have these lights as an alternative.

Mr. SKULLY. We have an alternative—the rotating beacon which is red. It is high intensity. Anything that seems to flash will catch the pilot's eye better than a steady light. We did a great deal of work on fluorescent paints many years ago. Again, unless you are looking at the object, you won't see it. It could be in your peripheral vision and you would see a flash immediately. The painting option really wouldn't do a great deal to help.

Mr. BURTON. When did you test that?

Mr. SKULLY. In the late 1950's or early 1960's.

Mr. BURTON. We've made some remarkable improvements in fluorescent paint lately.

Mr. SKULLY. I don't think it is a question of paint. I think it is a question of what the pilot sees.

Mr. BURTON. Well, the FAA is responsible and comes up with the money for these projects.

I assume some aircraft don't have flashing lights as an option——

Mr. SKULLY. They have a rotating beacon. Some have both.

Mr. BURTON. Some have neither.

Mr. SKULLY. They all have to have the beacon. They also have the navigation lights which are on the wing tips and tail. However, they are mainly for night operation because during the daylight they really don't stand out.

Mr. BURTON. How about the planes whose landing lights don't operate unless the landing gear is down. What do they have?

Mr. SKULLY. For example, the Cessna Citation—which I frequently fly—has a strobe beacon and a rotating beacon.

Mr. BURTON. They have to have either those lights or a rotating beacon.

Mr. SKULLY. I don't want to mislead you. There are about 33,000 aircraft that don't have an electrical system. They have no lights.

Mr. BURTON. How do you verify that pilots are trained to identify and react to a potential collision.

Mr. SKULLY. This would be given as a part of the flight test by either our inspectors or examiners. They note the awareness on the part of the examinee to be vigilant for aircraft and to look before they turn.

One of the things that Dr. Billings referred to is one of the questions I think they will ask. We have a very active accident prevention program that deals with the general aviation pilot. This is a voluntary type of program. People attend meetings in the Washington area. During the month of October, I went to one in Alexandria. We had 250 pilots there. Earlier this month we filled the Air and Space Museum with 700 pilots. We work with the industry that provides us with excellent training films to increase

the pilot's awareness of how to scan. In fact, the Aircraft Owners and Pilots Association has an excellent slide presentation that helps pilots develop a scan. During annual recurrent training of the air carrier pilots, we emphasize increased scan training and also sharing the workload. When the copilot is reading the checklist, the pilot has his eyes outside the cockpit under visual conditions. These are the things that we continue to emphasize.

I think now that we are getting a data base from the NASA reporting system, we can probably obtain some training aids that will highlight the areas where education is indeed needed.

Every pilot is required to take a biennial flight check with a flight instructor. Here again, we can continue to increase emphasis on the part of our flight instructors on the need for awareness. With the data base we have, we can highlight why a greater awareness is needed.

Mr. BURTON. You hope that they go out and make sure that the pilots are trained in identifying and keeping up.

Mr. SKULLY. Yes. It is a constant thing. I think we need to continue to keep pressure on it.

Mr. BURTON. You're constantly telling your people. I wonder if they constantly check on the other people?

Mr. SKULLY. I am certain that is so; yes, sir.

Mr. BURTON. You were talking about your evaluation of the utility of the heads-up displays in approach and landing operations. The evaluation will establish what safety implications the use of such devices should have. How long have you been working on that?

Mr. SKULLY. We have had an active R. & D. program on that. This will be only the second year. We are working with NASA on the heads-up display. We are using their sophisticated simulator. The program, as I see it, will run perhaps another 12 to 18 months.

Mr. BURTON. Doesn't the military do that already? Haven't they been doing it for years?

Mr. SKULLY. Yes, sir. They do it for a different purpose. They do it for military missions to fly at very low altitudes. They stay very close to the terrain. They don't have to look in the cockpit. Our approach is to evaluate it relative to going from a very low approach minimum to making the landing in very low weather conditions.

Mr. BURTON. You sat down with the military people—it looks like they have done at least some of the work for you.

Mr. SKULLY. Yes, they have. We work with them in their experiments at Wright-Patterson and they are aboard with what we are doing. What I was saying is that it is a little different approach. In fact, the French are probably further ahead than anyone.

Mr. BURTON. How do you make sure that the general aviation pilots are informed of the boundaries of the TCA's and the TRSA's. Dr. Billings already outlined the need to get more information out to the general aviation people. How do you do that?

Mr. SKULLY. We do it with the aviation news media. We have some publications. We put out advisory circulars. I think the most effective effort now deals with the pilot who has already passed the examination and is certificated. Through our biennial review with

our flight instructors, we make sure that the pilot is aware of what is required in TCA's and TRSA's.

Mr. BUTTERWORTH. Thank you Mr. Chairman.

There is a very interesting quote in the Airman's Information Manual, part 4, which is, as I understand it, the basic document you use to inform all pilots of good operating practices.

There is a quote on page 118. It defines the approach area as a place where commercial airliners descend on the published instrument approach routes.

Mr. SKULLY. Yes.

Mr. BUTTERWORTH. This is listed under good operating practices. It says that conducting a VFR operation in the approach area when the official visibility is 3 or 4 miles is not prohibited; but that good judgment dictates that you keep out of the approach areas.

I find that to be an interesting comment. You just advise people to stay out. Why can you not prohibit them? There probably is good reason, but——

Mr. SKULLY. I don't know how you would enforce it. I think the cautionary statement is one part. The approach areas, relative to control zones, are depicted on the normal VFR chart. Also, the normal flight chart shows where the approach paths are.

Mr. BUTTERWORTH. So you are depending upon general aviation pilots to exercise good judgment here and not fly where the commercial airliners regularly descend?

Mr. SKULLY. That is correct.

Mr. BURTON. Mr. Bond, when you state that communications are required at all airports having a U.S. control tower, what does the term "all airports" mean? Are there control towers besides U.S. control towers?

Mr. BELANGER. It means any airport under the United States jurisdiction that is operating a Federal control tower. The aircraft is required to establish two-way radio communications with that tower if he enters what we term the airport traffic area which is an area 5 miles in diameter and extends up to 3,000 feet—whether he transits or whether he intends to land.

Mr. BURTON. What airport isn't under U.S. control?

Mr. BELANGER. An airport in France, or Canada.

Mr. BURTON. How about Eureka, Calif.?

Mr. BELANGER. There are some non-Federal airports. There are some private airports. I'm referring to those airports that have a Federal tower.

Mr. BURTON. Right. In other words, if you put a Federal tower in at Eureka, then it is a Federal airport?

Mr. BELANGER. It is a rule that if we have a tower owned and operated by the FAA, that the pilot must establish two-way communications with our tower. It doesn't mean the airport is under the control—it means the airspace is under the control of the——

Mr. BURTON. On what basis do you determine the airports that don't get the towers? Does someone in Arcadia look up with binoculars and call out traffic to an approaching flight?

Mr. BELANGER. We have a tower establishment criteria that relates principally to the volume of aircraft, but it is a rather complicated formula. I would be glad to give it to you for the

record, but it gives a greater weight for the number of air carrier operations in the secondary——

Mr. BURTON. Is it based basically on volume——

Mr. BELANGER. It is a volume and the type of aircraft. It really relates to the passengers is what it finally boils down to. So we give a much higher weight to an air carrier that has a lot of passengers on board. There is a formula that works this out. For example, at both extremes of the formula, it would take 200,000 general aviation aircraft if there were no other type of aircraft in there. If it were air carrier aircraft and there were no other type aircraft, it would take 15,000 air carriers. I gave you the radar establishment formula, but it is similar to that. The numbers aren't as big. Then you get tradeoffs. There is a formula that works in both areas.

If you would like to have that for the record, we can provide it.

Mr. BURTON. I think that I generally understand it. But when somebody on the ground must scan the sky and call out traffic—it makes me not want to land at Eureka as much as I used to.

Mr. Skully talked about new aircraft being equipped with strobe lights. Do you require current aircraft to be retrofitted with strobe lights?

Mr. SKULLY. We haven't. Some aircraft would probably require major modification to install them.

Mr. BURTON. So we just leave them with whatever they have now?

Mr. SKULLY. I don't think there is a basis for requiring strobe lights.

Mr. BURTON. Then why are you doing it?

Mr. SKULLY. Because it is the state of the art, and its better than what we had before.

Mr. BURTON. But there is no basis for requiring it on the vast majority of the planes in the air.

Mr. SKULLY. We haven't required it. That is correct.

Mr. BURTON. You say it is good enough to require it on new ones, but not good enough to require retrofitting on present aircraft. I assume that the majority of the planes now flying, don't have strobe lights.

Mr. SKULLY. I would say the majority do not. I think this is the opportunity to take off on one of Dr. Billings' comments. We have lost aircraft because of strobe lights. Because of the fuel ignition, we have blown tanks. You have to be careful in designing it into the aircraft. There are some things that you just cannot retrofit and do safely.

Mr. BURTON. The loss you incurred because of strobe lights was on retrofitted aircraft, but not on new aircraft?

Mr. SKULLY. Some of them were new. Some were retrofitted, yes.

Mr. BURTON. You found out that they cause problems.

Mr. SKULLY. We've had problems, yes.

Mr. BURTON. In the chronology in your attempts to develop workable collision avoidance systems, there appear to be some reversals or changes of mind. Can you explain the thought behind the original action and the reversals and also give a timetable for implementation of the DABS and BCAS system? This was in your November 15 chronology.

Mr. BOND. Mr. Chairman, Dave Sheftel from our research and development office will address himself to that question. Mr. Sheftel was sworn this morning.

Mr. BURTON. Thank you. How did you know I was going to ask him that?

Go ahead, sir.

Mr. SHEFTEL. We did submit to Congress a letter about a year ago that summarized FAA's policy with respect to the current and future outlook in the current collision avoidance program.

One of the recently completed programs has been our look at a system called airborne collision avoidance system or ACAS. There were three commercial organizations that have produced systems that were competing for this capability—RCA, Honeywell and McDonnell Douglas. We tested this system and completed the tests of it about a year ago. The finds, and I am referring somewhat now to your point of reversal although I am not quite sure what's intended there, but I believe you were talking about outlook at such a system and our determination about that system. In that case we evaluated the systems that were supplied by these commercial organizations and did flight tests extensively. We found that the Honeywell system was the most satisfactory of the three. We did recommend against them, however. The recommendation against implementing any of these systems was on the basis of (1) it was a very costly implementation, (2) it would take quite a long time because in order for the system to have any significant effect it would have to have extensive implementation. In other words, the first aircraft that put a system on would have no protection. The first two would be protected against each other and so forth. The time it would take to implement all of the aircraft was a rather lengthy process.

Probably a more important pervasive reason for not recommending to go with that system was that, while it was all ongoing, we saw another way to do the job that would overcome a good deal of the problems. This is what you have referred to a moment ago as the BCAS system. The B stands for beacon, which refers to the air traffic control beacon system, and it is based on the use of the current transponder equipment, as you know, which is on many aircraft.

The fundamental benefit of using a system that is based on aircraft equipped with a beacon is that, unlike the previous system, the first aircraft that puts on a BCAS system is protected against every other aircraft that has a beacon transponder with mode C. Therefore, you get more protection in a near time and it is using equipment that is on board.

Mr. BURTON. Do you have a timetable on BCAS and DABS?

Mr. SHEFTEL. Yes, sir.

The BCAS equipment, of course, has been flight tested already in various experimental versions. Right at the moment we are trying to make a determination——

Mr. BURTON. I'm not trying to pin you down to a specific date, but approximately when do you hope to have these things on board?

Mr. SHEFTEL. They will be ready for FAA to decide on whether or not to go with the proposed rulemaking, in two versions. Let me give you two steps.

At this point we have completed enough testing so that we could look at one possible version, a simpler version that has less overall capacity. That could be implemented right now. We could write a standard and industry could decide on building such a product and this has been tested.

There is another version which I will refer to as a tri-modal. It has more capability. I won't go into these various capabilities. We can supply this information for the record, but that will be ready for a decision on the standards within about 2 years.

Mr. BURTON. Which industry are we talking about?

Mr. SHEFTEL. These are normally the avionics types of industries.

Mr. BURTON. If you came out with the rule, how could they not decide to build it?

Mr. SHEFTEL. I guess they determine that based on their perception of the market.

Mr. BURTON. So, in other words, they control your decision. If they say there is no market, we're not going to build them, you can't mandate something nobody will build.

Mr. SHEFTEL. In the rulemaking process, which I am not expert in, but nevertheless it bears on that point, there will have to be a decision as to whether this is mandatory equipage or voluntary equipage. Of course, if it does become voluntary equipage, then it——

Mr. BURTON. Then nobody will have to worry about it because nobody has to use it.

Mr. SHEFTEL. It will be a question of the individual user deciding that he wants to—if that is the rule. Now this decision has not been made yet.

Mr. BURTON. Do you need a rule to make something voluntary?

Mr. SKULLY. If I could use the ground——

Mr. BURTON. Do you need a rule to make something voluntary?

Mr. SKULLY. Not that I know of.

Mr. BURTON. So why would you use a rule to make something voluntary?

Mr. SKULLY. I think Mr. Sheftel was passing the ball to me and I was going to try to explain. With the ground proximity warning system, we had one vendor that really had the market cornered. That vendor was the only one that I knew of, or that anyone else knew of, that build the device. That was at the time the rule was put out in December 1974 to become effective for all carriers in December 1975—1 year later. All of a sudden, within 2 or 3 months, we found four vendors in addition to the one that initially had the market tied up. They did supply the demand.

The point is that once we put out a requirement, we will have many vendors that will supply.

Mr. BOND. Mr. Chairman, you also asked the question about the voluntary aspects of this.

Mr. BURTON. I don't know why you need a rule that says that people may do something.

Mr. BOND. Well, there is an answer to that. The answer is that if you put out a rule on a certain piece of equipment or a technique,

even though it is voluntary it fixes the technology. That is what you can buy if you want. Then you can decide where it is voluntary and where it is mandatory. The best example I can think of in that regard is the transponder. Today it is voluntary for many aircraft and yet, more than 75 percent of the aircraft capable of carrying transponders, which includes the vast majority of those who fly in controlled airspace, are equipped with transponders. Most of them are voluntarily so equipped.

Mr. BURTON. Why would you make a rule voluntary?

Mr. BOND. In the case of transponders, many, many aircraft do not ever come into controlled airspace. Many of them fly in Montana and the Northwest where there is no radar coverage and no density of traffic——

Mr. BURTON. Can't you make it mandatory with an exclusion?

Mr. BOND. For example with agricultural aircraft which don't go very far and they are just aerial applications——

Mr. BURTON. Can't you make something mandatory and just exclude crop dusters——

Mr. SKULLY. Yes, sir.

Mr. BURTON. Doesn't that make more sense than making it voluntary, or is it too difficult to establish specific exclusions?

Mr. SKULLY. It is difficult in this respect. If you, for example, manufacture a crop duster in Elmira, N.Y. If we say you don't need it when you're doing your crop dusting work, how do you fly it from Elmira to Texas? In other words, you would have to put in a temporary transponder to fly in the airspace to get there. It is a small point, but I think we could do it. For example, Mr. Bond's point was that most aircraft coming off the assembly line today have transponders. They have them because customers see the advantage to them. Transponders permit them to operate in areas where you must have one to operate. We could conceivably require, under certain conditions, a transponder on each new aircraft.

Mr. BURTON. I just think that makes more sense than to establish a rule saying that if they want to use this, they should feel free to do so because they could do it anyway without your rule, if they wanted to.

Mr. SKULLY. A lot of the devices we put out are designed to a technical standard order—TSO—standards which they have to meet.

Mr. BURTON. What do you mean by standards for cockpit visibility?

Mr. SKULLY. That is a very complex formula that we use which considers how much seat height the pilot has and the degree of visibility that is available to him. All of the wide body aircraft—the DC-10, B-747, and L-1011—have tremendous visibility. The pilots are very pleased with this improvement.

Mr. BURTON. Isn't cockpit visibility pretty crucial to "see and avoid"?

Mr. SKULLY. Yes, sir.

Mr. BURTON. In other words, you really don't have standards, you have a formula.

Mr. SKULLY. It is a standard.

Mr. BURTON. It is achieved by a formula.

Mr. SKULLY. Yes, sir.

Mr. BURTON. How reliable is a primary radar return on small general aviation aircraft, like a Cessna 150, which is nontransponder equipped? You could also supply for the record, if that's necessary, the number of general aviation aircraft which aren't equipped with transponders, if you have that information.

The record will be kept open to permit this information to be inserted upon receipt.

[The material follows:]

TRANSPONDER/ENCODER POPULATION AS OF JANUARY 1, 1976

| | |
|---|---|
| General Aviation Fleet | 168,500 |
| Cannot Carry Avionics | 33,000 |
| | 135,500 |

Of 135,500, 78 percent carry transponders (105,700), 24 percent carry encoders (32,500).

Mr. BELANGER. The detection of nontransponder equipped aircraft is related to the size of the aircraft, the distance from the antenna, the atmospherics involved, and the primary return is not as reliable or as detectable as a transponder. Otherwise, that's why we require transponders and aircraft use them. The degree varies with a host of things. But if the question is if it is as reliable as a transponder, or as detectable as a transponder, the answer is no.

Mr. BURTON. Can you estimate how many general aviation aircraft aren't equipped with transponders?

Mr. SKULLY. We show 35,000 without them. In addition, there are 33,000 that have no electrical system so you cannot install them. So the total would be about 68,000 without transponders. There are 105,000 aircraft with transponders.

Mr. BUTTERWORTH. We were speaking before about the voluntary nature of the transponder requirement. To get someone to use something, it should be cheap. You are more inclined to equip your aircraft with a transponder if it costs $8,000 rather than $18,000. Therefore it is interesting that when the FAA relaxed its requirements for an altitude-reporting transponder in group II TCA's, it said that it had received 12 comments against that proposed relaxation. Those comments, as summarized by the FAA in the report, indicated that the principal argument opposing the proposal was that limiting the transponder requirement in group II TCA's would create an economic hardship on the manufacturers of these components. In other words, these objectors were saying that if you don't require it across the board—rather like the airbag—your unit cost will not go down.

If you require transponders in certain terminal areas so that we can fulfill the commonsense notion that the controller should be able to either see all aircraft or talk to all pilots, that would in turn decrease the unit cost of transponders generally, which is the main reason that AOPA and other general aviation groups resist this requirement in the first place.

What is your comment on this?

Mr. BELANGER. My comment is that their comments were from the manufacturers and very parochial. They would like to see a rule enacted that would help them sell their product, in fact,

require that the public buy their product. Obviously, their comments are going to be negative to that proposal.

Mr. BUTTERWORTH. Could it not also induce them to compete with one another?

Mr. BELANGER. Their statement is correct that the unit cost would go down.

Mr. BUTTERWORTH. That is all I am saying.

Mr. BELANGER. I am just getting at their motivation.

Mr. BUTTERWORTH. Motivation is always grey, if not black.

Mr. BURTON. We have a little parochial question here. Have there been any steps taken to optimize radar coverage in the San Francisco area, particularly for aircraft arriving from the Northwest?

Mr. BELANGER. I can almost give you an unqualified yes, but I don't dare do that because we have had a rather substantial number of radar improvements that have been steadily improving the state of the art, both in the primary radar coverage and the secondary radar coverage. Which of those have been implemented at San Francisco, I am not quite sure. I would prefer to be accurate and supply that for the record.

Mr. BURTON. All right.

The record will be left open to permit this information to be inserted.

[The material follows:]

SAN FRANCISCO/SAN JOSE

Oakland Bay TRACON is a dual ARTS III facility providing radar approach control service to eleven Bay area airports utilizing the Oakland ASR-7 and the Moffett ASR-5 radars.

BRITE TV remoting of the Moffett radar is being installed in the San Jose Tower and is expected to be completed by the end of June 1978.

The Moffett ASR is a joint FAA/US Navy use radar which is located adjacent to a landfill near Moffett Airport. As the landfill level rises, radar coverage is reduced. The FAA and Navy have discussed relocating the Moffett ASR. The FAA favors the San Jose Airport and the Navy favors Moffett Airport as a location.

We are considering installation of the improved ASR-8 antenna on the Moffett radar.

Mr. BURTON. In Sacramento, when I was in the State legislature, they used an old Army radar which had a "core of silence" directly above the radar. Then they had another radar in the Sacramento valley, which is surrounded by mountains. They had the radar down in the valley when it made more sense to locate it higher up on the ridges to avoid the radar coverage being blocked. Do you know anything about that?

Mr. BELANGER. I am not familiar with the exact location. Your analogy is correct though. If it is a long-range radar, valley sitings are not too good as opposed if it is a terminal radar, the valley siting would be appropriate. As to the state of the art of the radar at Sacramento, we did have what we call ASR-III's——

Mr. BURTON. I think we heard about that yesterday.

Mr. BELANGER. No. You heard about the long range then. This is a terminal radar. The III's are being phased out and it well might be that Sacramento had an ASR-III as opposed to ARSR-III and maybe—but I would have to give that to you for the record. I really don't know.

Mr. BURTON. Thank you.

[The material follows:]

SACRAMENTO, CALIF.

Sacramento (McClellan RAPCON) is a dual ARTS III facility providing radar approach control services for six airports utilizing the ASR-4 at McClellan AFB and the ASR-5 located at Beale AFB. In August 1977, a prototype 5 foot open array ATCRBS antenna was installed at McClellan. A production model of the 5 foot open array ATCRBS antenna was installed at McClellan during calendar year 1978. Also, an improved ASR-8 antenna is scheduled for commissioning at McClellan in August 1978.

Mr. BURTON. Rachel?

Ms. HALTERMAN. Thank you, Mr Chairman, one question.

Mr. Belanger, this would be appropriate for you.

On the radio communication issue, Dr. Billings stated that in a terminal radar service area, a pilot flying under visual flight rules may elect not to receive radar services either by refusing such services or simply by not communicating with air traffic control. Aren't they required to communicate with air traffic control?

Mr. BELANGER. The TRSA area extends from about 15 miles and 7,000 feet. The airport traffic area is a 5-mile radius and 3,000 feet. In order to enter the airport traffic area, 5 miles and 3,000 feet, you must communicate with the tower. The other part of the airspace, the part that Dr. Billings was referring to, is optional.

Ms. HALTERMAN. OK. Thank you.

Mr. BURTON. The Chair is just going to have a 5-minute break. We will be through with you gentlemen shortly.

The committee will recess for 5 minutes.

[Recess taken.]

Mr. BURTON. We will resume.

With regard to your formula for installing towers—what is the passenger limit that shouldn't be exceeded unless you have a tower? Ten thousand a day? Six?

Mr. BELANGER. You would need a tower with 10,000 a day.

Mr. BURTON. In other words, airports that only get 10,000—are protected by visual scans? As Mel Brooks said, "that used to be one of the good jobs in the old days, looking up in the sky."

Mr. BELANGER. As I stated a little bit earlier, it is a combination of weight factors and finally you come up with one. I will read to you what the formula is: If it is air carriers only, it is 15,000; if it is air taxis only, it is 25,000; if it is general aviation aircraft, it is 200,000 operations. It can be a combination thereof with the appropriate weight at 15,000 to 200,000.

Mr. BURTON. Can you ever get down? In other words, would there be a factor

Mr. BELANGER. There is a discontinuance—is that what you are referring to?

Mr. BURTON. Not taking one away, but let's take Eureka again. They sure have a lot of fog. There are 10 air carrier departures and 234 people enplaned daily in Eureka, so I guess under the rules it would not need a tower.

Mr. BELANGER. I would have to know the number of air taxis operations and the number of general aviation operations also.

Mr. BURTON. Ten scheduled air carriers——

Mr. SKULLY. With the average daily enplanement of 234.

Mr. BELANGER. That would be roughly 3,600 air carrier operations a year.

Mr. BURTON. Right.

Mr. BELANGER. I am assuming that is one in and one out——

Mr. BUTTERWORTH. These are numbers supplied by your own people.

Mr. BELANGER. I can't really answer off the top of my head. If they are running 3,600 air carriers a year, they are probably getting close.

It seems to me that when you get up around 5,000 or 6,000 air carriers as a rule, that almost puts you in the ball park if you have any volume of other type air traffic. I really can't tell you off the top of my head as to whether they do or don't qualify—or how close they are, for that matter.

Mr. BURTON. Why is it a problem to have towers at almost every airport except perhaps those which have only six or seven general aviation operations in a day? Is it the cost to the Government, or that the planes might not want to use them, or what?

Mr. BELANGER. That is correct. It is the cost of the initial investment for the tower which is around $500,000 and the recurring costs of a small tower which would be an annual recurring cost of around $120,000 to $150,000.

Mr. BURTON. We spill that much when we drink—some of us.

Mr. BELANGER. When you add it up for the 12,000 airports that are in the country, it is a rather monumental figure if you are talking about all airports. If you back it off to just airports with air carrier operations, you're still talking in the neighborhood of $500 million to $600 million. That is on a one-shot cost. If you include the air commuters and air taxi operators, our point is a life, a life, a life.

Mr. BURTON. Life is the most precious thing we have and when it ends, it's over. It is pretty tough to put a buck on it.

Mr. BELANGER. Very difficult.

Mr. BURTON. I have one more question and then we will wait for one of my colleagues—Congressman Dale Milford—who expressed a strong desire to testify, and who was going to be here about a half-hour ago.

Getting back to those memos again, I would appreciate having, if possible, whatever records of internal discussions you all had about these memos. Mr. Clark's memo said that past history indicates that maintenance, and so forth, is the first place where airlines cut back. I am very interested in finding out about the necessity for this agency to really be ready and to be aware of what could happen under deregulation. If it does happen, a lot of things may happen that you may well want to consider beforehand—at least this is how I understand the memos.

I would like to know your response to them and how you viewed them. I would like to know whether somebody really did exaggerate and did try to feather their own nest. I would like to know whether or not they were accurate.

The fact that they all seem to indicate a decline in FAA inspectors and a greater reliance on the carriers is of interest. Again, if they are trying to save a buck, we may not want them to be doing some of the Government's work for us.

Mr. BOND. We will be happy to send you a position paper on that, Mr. Chairman, and also to send you whatever internal memorandums we have on the subject.

Mr. BURTON. We haven't really discussed these things much.

Mr. BOND. Mr. Chairman, as your hearing yesterday revealed, we don't write down everything that we say in our meetings. [Laughter.]

Mr. BURTON. Did you have much discussion on those memos except to say they are here and——

Mr. SKULLY. The thing that has been glossed over is that I didn't ask for staffing requirements. I asked for other issues. The issues I was talking about were whether there were any regulatory changes that might be necessary. That sort of thing. I knew what the answer would be if I were to ask that, if there was a 10-percent increase in commuter activity, will we require new people. The answer would quite obviously be yes.

Mr. BURTON. The director has requested that you provide input on the subject of regulatory reform potential issues as they relate to flight standards.

Mr. SKULLY. That is correct.

Mr. BOND. I can understand, Mr. Chairman, how the recipients of that particular memo might not feel that it is very clear——

Mr. BURTON. In other words, you said "You have a responsibility. What issues do you see?" They raise potential issues. In fact, I don't think that Clark asked for any more people. He just really pointed out problems. He pointed out some serious potential problems and didn't ask for any more people. Some of the others glossed over the issue and weren't quite as strong as Clark while talking about positions. Flight Standards say they have lost 260 positions since 1971, despite a growth in aviation activity which creates additional demands on the inspector work force. Any proliferation would further increase the demand. Again, I don't think they asked for people. They just stated what the problem was.

Mr. SKULLY. That is correct.

Mr. BURTON. They seem to be under a heavy workload now and any increase is going to make the workload greater.

Again, one of the things I want you to understand, Mr. Bond, and all of you gentlemen, is that there are two parts to it. First, the new commuters and so on, and second the existing carriers which will be under increased competition. You will have to be even more vigilant since you have delegated some of your responsibilities to the air carriers themselves. They may have to dismiss the guy who has been doing FAA's safety-related inspections. What I am saying is that I would really love to know what past experience he had that made him say the first corner to be cut will be maintenance training. He didn't ask for people; his concern was related to what regulations should be changed—it was input on the subject of regulatory reform potential issues. That's what you asked for. You didn't ask them to define regulations. You asked what issues they saw and how their area might be affected. I really don't think they were saying they wanted more manpower.

I would like all of that information for the record.

I thank you very much for your testimony and your patience today.

As I told Mr. Skully, it is nothing personal. It is just business. I am not mad at anybody. I was just a little upset with the fact that you failed to even think there was going to be a problem.

If you assume deregulation now and if all of a sudden, the bill had an immediately effective date, you will need lead time which you may or may not be given. That's why I raised the issue. I thank you very much for your patience and courtesy. I apologize if you thought I was angry or upset with anyone individually, which I wasn't. This upset me viscerally almost more than your procurement problems because they just totally boggled everyone's mind.

So again, thank you, gentlemen.

If the Congressman isn't here at 1 o'clock, the committee will be adjourned then.

Mr. BOND. Thank you, Mr. Chairman.

Mr. BURTON. The record will remain open to permit insertion of the above-mentioned material.

[See Congressional Record.]

[Recess taken.]

Mr. BURTON. Congressman Milford, I am sorry for the delay. I received your letter yesterday just as we were in the middle of our procurement examination and informed your staff that we would be happy to have you testify today. I missed you this morning when you were here. Until I received that letter, I hadn't heard from you.

Congressman Milford, we are very pleased to have you before this committee. One of the things we should have thought of, which I am sure took some of your time, is to let you know that you didn't have to make copies of your statement. You didn't have to try and run those off.

Please proceed.

## STATEMENT OF HON. DALE MILFORD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. MILFORD. Mr. Chairman, I appreciate the opportunity of appearing before your committee and I apoligize in that I do not have copies that I can hand out. I may have to stumble a bit as I pull together the testimony.

Mr. BURTON. With your experience in this area, Congressman, I am sure that you'll do a good job of providing us with some information.

Mr. MILFORD. Well, in any case, Mr. Chairman, I do appreciate it.

Perhaps it would be in order for me to explain to you just why I felt so strongly about testifying before your committee. In that respect, a little personal background information might be in order, if you will bear with me.

In an official capacity, I feel that what you are doing here in this committee hearing is well within the jurisdiction of two committees on which I serve in the House of Representatives. I am privileged to serve as chairman for one of these committees, the Subcommittee on Transportation, Aviation and Weather under Science and Technology. That subcommittee has jurisdiction over all research and development activities dealing in aviation. In addition, I am privileged to be a member of the Subcommittee on Aviation under Public Works and Transportation. This subcommittee has jurisdic-

tion and oversight over all other aspects of aviation. Therefore, Mr. Chairman, when adverse charges are made concerning air safety, procurement practices, or aviation research activities, such charges would apply equally to the subcommittees on which I serve. These subcommittees are directly charged with the oversight of all these activities. One cannot charge the Federal Aviation Administration of malfeasance or laxity without also charging the authorizing subcommittees with failing to do their work.

Mr. BURTON. If I may interrupt you at this point, Mr. Chairman, under the rules of the House, this committee has expressly stated oversight into the efficiency and economy of all of the areas of Government. The committee is divided into subcommittees. This subcommittee happens to deal with transportation and Government activities. Another subcommittee will deal with HEW, for example. Yet another subcommittee will deal with the Department of Defense. As expressly stated under our rule, we have jurisdiction over the efficiency and economy of the Federal Aviation Administration and in no way are our hearings ever meant to impugn in any way the work done by any of the other distinguished committees and subcommittees of either the House or the Senate. We have our own responsibilities as well. They are stated further in the rules——

Mr. MILFORD. Mr. Chairman. Perhaps you misunderstand me. I am not questioning the jurisdiction of your subcommittee. I am stating that when certain charges are made that those charges would also reflect directly on the subcommittees which I serve on or chair—it is the charges that I am concerned with, not with your committee's jurisdiction nor, for that matter, your right to investigate or look into any of these matters. I don't question that.

My interest goes even deeper than just a concern for the various subcommittee jurisdictions. Unlike the vast majority of Members serving in this body, I have never held a political office of any kind prior to being elected to Congress in 1973. My profession consisted of working in two closely related fields, aviation and meteorology. Prior to coming to Congress, I was a nationally recognized consultant in those fields with an established expertise in air safety. I have personally logged over 6,500 flying hours in every type of aircraft from a small two-seater, that I built myself, to DC–10's and helicopters. Therefore, aviation to me is more than just a committee jurisdictional matter. I have spent my entire adult life working in this field. My first job in 1942 was employment as an aircraft communicator in the old CAA—that is now the FAA. I later became an aircraft controller during World War II and a pilot beginning with the Korean war.

Aviation to me, Mr. Chairman, is a dedication. Aviation is a very complex field. Few people understand the airplane and most have a natural fear of flying. There is a true mystique surrounding flying activities. Romantics, including many of our present day pilots, like to maintain this mysterious atmosphere by projecting an image of the manly, brave conqueror of the wild blue yonder. The press media is also a perpetrator of the flying mystique. People's normal fear of flying, when coupled with this mystique, is always good for very dramatic news stories. This explains why even the slightest fender-bender mishap in aviation is always given front page treat-

ment, regardless of whether injuries or deaths occur. Consistently, persons not trained in aviation matters, will normally ignore some ironclad facts about aviation. For example, it can be proven beyond a shadow of a doubt that aviation is the safest mode of transportation available. Truly, the only dangerous element in flying is traveling to and from the airport. Yet every news story will clearly imply or overtly point out the dangers of flying. Since coming to Congress I have also found that congressional committees and subcommittees often misunderstand factors involving aviation. These misunderstandings then foster misguided actions on the part of these congressional panels.

My own Subcommittee on Aviation and Transportation consists of many members who have extensive aviation backgrounds. Several are experienced pilots. We have traveled throughout the country visiting all FAA facilities, numerous airports, and aviation manufacturing establishments and we have spoken with all segments of the aviation community. In so doing, we have been afforded the opportunity to see first-hand how the total air transportation system works, through the interaction of its various components.

During the past several years the subcommittee has conducted numerous and thorough examinations of the areas which you are presently concerned with today, Mr. Chairman. In fact, just this fall, we held two separate sets of hearings concerning FAA R. & D. programs. The first set of hearings concluded a lengthy summary of future needs and opportunities in the air traffic control system. The subcommittee report, including findings and recommendations, will be printed within the next week and we will make available to you that report at that time, Mr. Chairman.

Our second hearings marked the beginning of our annual reviews of all FAA R. & D. programs. This will be completed in February when the President presents his annual budget to the Congress.

Mr. Chairman, I bring this to your attention so that you may be assured that the FAA R. & D. programs, including those that relate to safety, are receiving the closest congressional scrutiny. I might also point out that on the Aviation Subcommittee of Public Works and Transportation, we have been working tirelessly in fullfilling the regulatory jurisdictions over FAA.

Mr. Chairman, I must personally take exception to some of the visious attacks that are unjustly directed toward the FAA. These unjust attacks imply that the committee on which I sit are not doing their jobs. In a sense it is a slander of the dedicated and hardworking members of these two committees and I frankly resent it.

It seems fashionable these days to be very critical of the activities of FAA and Government agencies in general. Indeed our own examination led us to criticize some aspects of FAA's programs. However, we must constantly guard against popular misconceptions, oversimplifications, and generalizations regarding the very complex and technical subject of air traffic safety.

For example, some critics of the FAA claim that the fine safety record in the United States resulted not because of, but in spite of, FAA. Mr. Chairman, nothing could be further from the truth. For the past several years I have heard from just about every responsi-

ble aviation expert in the country and have never heard such a statement. The facts clearly show that the FAA has had a major role in achieving this safety record. This is not to say that there is no room for improvement. During our recent hearings my subcommittee found that while the U.S. air traffic control system is the best in the world, advances in sophisticated computer satellite and avionic technology offered great potential for vast improvement upon the present system. My subcommittee will continue to do everything in its power to assure that all these potentials are thoroughly evaluated and that the appropriate technologies are implemented.

For example, for some time now, the subcommittee has been extremely interested in a replacement for the instrument landing system, the ILS. Approaches and landings are statistically the most hazardous portion of a flight. The ILS has lessened the danger to a great degree but it is old and technologically outdated. A new system called the microwave landing system, or MLS, offers great improvements over ILS. The sooner we get MLS installed, the more lives we are going to save. The FAA has spent over a decade and nearly $100 million in an effort to make MLS a reality. Their system was selected by a technical panel at the International Civil Aviation Organization and has now been forwarded to the worldwide body for a final vote in April. If the process is completed on schedule, a very important step forward will have been taken in the cause of aviation safety. Unfortunately, there are those with selfish interests who would seek delay of the international vote. A strong lobbying campaign which unjustly and maliciously attacked the FAA program and the decision of the ICAO panel has found its way into the offices of some congressional Members. This campaign has been very successful with those who are unfamiliar with the facts.

If allowed to continue, the results of the campaign would not only work against the best interests of the United States but would also improperly influence the international deliberations on MLS.

Another important area of flight, which is of great interest to both our subcommittees, is that of collision avoidance. This area has been receiving a great deal of attention and effort on the part of FAA over the years and has lead to the beacon collision avoidance system, commonly called BCAS. Our recent hearings indicated near unanimous support of aviation experts for BCAS. The FAA is pursuing this program on schedule.

I am also aware of the substantial progress which the FAA has made in refinement to its present air traffic control system to minimize the possibility of midair collision. But beyond that, nearly all the witnesses at our ATC hearings supported increased pilot involvement in the ATC process. We found that it is now technologically possible to provide the pilot with more information and that the pilot and the system could greatly benefit from such information. We'll be urging the FAA and NASA to both take a closer look at these technological options and to report back to the subcommittee at an early date.

Another technology, literally on the horizon that would greatly enhance the collision avoidance capabilities, is that of the Navstar global positioning system, or GPS. This system currently being

developed by BOB could eventually provide precise worldwide navigation capabilities to civil aviation. My subcommittee will be asking FAA, NASA, DOD, and OSTP to jointly study this potential and to seek an early executive branch decision concerning the civil applications of Navstar. Again, this technology could significantly improve upon our present system of collision avoidance.

Mr. Chairman, I have just cited a few examples of the present and future technological solutions to aviation safety problems. My subcommittee has studied many others in great depth. We realize that any constructive solution to such complex and technical problems require such detailed study. As much as we would like to solve all the safety related problems of aviation today, we realize that we must move responsibly and deliberately. We have a very serious job to perform and cannot succumb to the pressure of those that all too often are ill informed and overly emotional.

I noted with interest recently a television network news program that examined the FAA and air safety. As I have indicated, the subject is extremely complex and technical and the network was working under the handicap of a very short time spot. Therefore I did not expect a complete and detailed examination of the FAA's programs. However, I was disturbed at many of the serious allegations that were leveled against the FAA. Allegations that were not in keeping with the testimony of expert witnesses at the hearings of my subcommittee over the past several years, and which resulted in grossly distorted and inaccurate pictures of the FAA's programs. Because of this I asked the FAA to immediately respond to me concerning these allegations. I have that response here with me today, Mr. Chairman, and I would like to enter it in your record at this point, with your permission.

Mr. BURTON. Without objection, it will be made part of the record.

[See Congressional Record.]

Mr. BURTON. Do we now send that back to the people who did the program and have them respond to the response? The purpose of these hearings, in my mind, is not relevant to any TV specials. They deal with two factors. But I would like those responses in the record.

Mr. MILFORD. I believe that in your hearing, Mr. Chairman, reference has been made to this particular newscast. That is why I would like very much for the detailed response——

Mr. BURTON. I don't think it was mentioned in the record, but I have no problem having that put in the record and without objection, that will be the order.

Mr. MILFORD. Now while the document that I have just inserted can stand on its own feet, I would like to make a few observations based on my personal knowledge.

First, the allegation that FAA cheated in its handling of the MLS program is totally without foundation. My subcommittee has thoroughly investigated this charge and it simply is not true.

Second, the statement that if you fly very often you've nearly crashed more than once is painfully ridiculous and has no basis in fact. It was a statement made in the broadcast referred to.

Even a casual acquaintance with the U.S. safety record proves the fallacy of that statement.

Third, the statement that pilots are afraid to speak out for fear of reprisal is absurd. In our most recent hearings we heard from numerous pilot associations and individual pilots who openly expressed their views whether critical or in support of the FAA programs. I could go on ad infinitum, but I won't belabor the point, Mr. Chairman. The FAA document contains a complete rebuttal of the allegations made on that NBC newscast.

I am frankly concerned, Mr. Chairman, that this subcommittee before which I am now appearing, perhaps based on some erroneous information such as the recent telecast, may be a bit overzealous and is acting a little too hastily in its criticism of FAA.

Mr. BURTON. At this point may I interrupt you, sir?

Mr. MILFORD. Yes, sir.

Mr. BURTON. I don't think we are being overzealous. Our dealings with the FAA have led me to have less confidence in them than you have, and a look at the charts and how they spend the people's money and how they have answered some questions before this committee just gives me cause to wonder.

We are out to find out what the facts are and if we really wanted to have a television spectacular, that would be for someone else to sponsor.

This subcommittee has shown an interest in the FAA over the years and we do have an interest in them now. The record of yesterday's hearing on procurement management, and some of the statements that were made today before the subcommittee, as well as prior to this hearing, helped lead to questions we want answered. Your testimony deals with part of that.

This subcommittee, to my knowledge, hasn't been and isn't a headline-grabbing subcommittee. We have a responsibility. We see the responsibility, I guess, in a little different way because your committees deal with how FAA spends appropriated funds. In other words, I am a little bit surprised by your attitude toward this committee: That we would dare to have a hearing on the FAA.

Mr. MILFORD. Mr. Chairman, as I stated earlier, I did not question this committee's jurisdiction. What bothers me is that if a fair and balanced picture of air safety is to be presented at a hearing, I would expect to see representatives from the user groups and other interested associations and individuals that might perhaps have another point of view. The users are conspicuous by their absence.

Mr. BURTON. The only persons who testified before this committee were a staff member who was designated by GAO to work on the procurement giveaways, the GAO itself, NASA, and the FAA. There has not been a "professional critic" of the FAA who has testified before this committee at all. There were facts from the GAO. There were facts from NASA. There were statements from FAA. You didn't see any of the anti-FAA groups coming in here and testifying. In fact, several asked to testify and we said we weren't interested in that. We were interested in getting the facts and getting answers to questions that FAA supplied us.

Mr. MILFORD. I certainly don't want to debate with my friend from California. I simply would like to lay forth an opinion, which I have tried to do here. The committee may consider it in whatever way it wishes.

Mr. BURTON. I just wanted to give you the facts, sir. In other words, there were not any opponents of the FAA testifying before this committee—unless you could call GAO's critique of them——

Mr. MILFORD. I would be perfectly willing to let the record of the committee speak for itself and simply to offer an opinion.

I firmly believe that if we are going to do anything constructive in the area of air safety, we must present a balanced and accurate picture of the entire situation. I can't help but feel that the time for bludgeoning the FAA with a meat ax is over. I will be glad when the press and Members of Congress get off of that kick. This not only applies to FAA but to other Government agencies. I happen to believe that at least more than a few of the 50,000 employees of that agency are pretty dedicated in what they are trying to do.

We should now, I feel, operate on the agency with a scalpel where we cut out that area that is unhealthy and not destroy the complete animal. It is real easy for us to criticize. I simply wanted the full technical matter to be a part of your record which has been submitted.

Mr. BURTON. As I say, that is their response which may or not—one of your colleagues, I think he is the ranking minority member on the subcommittee, Mr. Goldwater, told us that at future hearings on the FAA he certainly would like to be heard and that we would do that during a discussion of MLS which we really didn't have on these hearings.

The only question I had—and it turned out to be a mistake—was how some building ended up at the Brussels Airport that was never there. The agency admitted that it was a mistake and it really wasn't relevant to us.

The record for this hearing will be your testimony, the FAA's testimony, NASA's testimony, GAO's testimony, and that's it. The bulk of the testimony that was in any way—well, it wasn't in any way adverse. It was damning of the FAA, and it dealt with their procurement policies, contracts, and so forth.

I do not have the experience in aviation that you do or with the FAA that you do, but our initial experience here doesn't lead to a great deal of confidence. They didn't find any real fault except in their management of procurement, but their answers to certain simple questions did not lead at least this member to have all that basic confidence. In my judgment I didn't see how anybody could give that type of answer. I think today's testimony was excellent. As was developed in yesterday's testimony on the ASR–8 everybody could point a finger at two people who weren't here—Mr. Dow and Mr. Butterfield.

All we are trying to do is to get the facts and try to help FAA, as we see it, because they are a very important agency. They do have a duty to provide safety and that is why, in some measures, they may have to be held to a higher level of performance than some other governmental agencies because if they do make a mistake, it might be a dandy.

Mr. MILFORD. My experience with the agency is that FAA is so aware of safety that their actions almost border on fanaticism at times. You can determine this for yourself by a visit to any air

traffic control center where you can see the controller working. You can see why some of them now have ulcers.

Mr. BURTON. I'm not talking about those who work for the agency. I'm talking about those who run the agency. Certainly the traffic controllers and the others are dedicated people. I'm talking about those that——

Mr. MILFORD. Those that are now running the agency were previously working in those centers or towers or aircraft communication stations.

Mr. BURTON. That is fine for then, but now they are running the agency.

Mr. MILFORD. I'm not here to broadcast a total defense. I do not want malfeasance on the part of any agency or any member of an agency. I simply felt that we were going at it with a meat ax without giving any credit to that which might be good in the agency.

Mr. BURTON. The purposes of the hearings were rather established. One was procurement. It should have been gone after with an atom bomb. I was told by the Administrator at an earlier hearing he doesn't see any problem in remarks made dealing with FAA's potential increased safety duties as a result of possible economic deregulations. I have a memo which he said he wasn't even aware of, and yet the person sitting next to him at that time should have at least told the Administrator about it, if he were aware of it. They have memos laying out some potential problems that out of hand they seem to have dismissed.

The other part dealt with the "see and avoid" policy. If they didn't lose all of that money with General Dynamics, maybe they might have some simulators down at the academy. Then they wouldn't lose all of that money by washing out people after such a long time. So those were the things coming in. I don't really believe that we used the meat ax approach. I think that it is our responsibility to supply information to the Members of Congress, as your subcommittee findings also will be.

Mr. MILFORD. I hope we won't lose sight of what I tried to say when I came here. One of the purposes of my coming here was to point out the fact that we are dealing with a very complex subject. Our committee deals solely with aviation. Recently, we began to see some seemingly weird practices taking place in various FAA functions and operations. On the surface the practices didn't make any sense at all, but from digging underneath the surface and beyond the obvious, we found that much of the unusual practices were dictated by past rulings from courts and product liability lawsuits. Many of their procurement practices right now are being controlled, not by what would normally be good business where one would go out and buy an ILS system or an approach light system—but because of adverse court rulings that have virtually ripped off the U.S. taxpayer. They are now having to bend their way of doing business to keep from buying these aviation accidents.

We have billions of dollars in claims pending against FAA right now in lawsuit actions. They are virtually becoming the patsy of last resort. So much of what they are having to do is dictated, not by good business practices, but by lawsuits.

Mr. BURTON. I have to respectfully disagree. I don't know of any lawsuit in the world that would have compelled FAA to give a bailout to General Dynamics at the taxpayers' expense.

Mr. MILFORD. I am not applying it to any specific——

Mr. BURTON. But the items our hearings dealt with were specific things. In the ARS–8 procurement, there wasn't any court decision and there was nothing forcing them to do anything except their own bad judgment for which the taxpayer ended up paying and for which, in the long run——

Mr. MILFORD. Isn't there litigation pending in this procurement action?

Mr. BURTON. Yes, General Dynamics is trying to get more.

Mr. MILFORD. Then any FAA official sitting before this committee could be placed in a very peculiar position in that anything he might say could be used in an adverse manner against the U.S. taxpayer in the litigation.

Mr. BURTON. Not at all. In fact, if the FAA had done the right thing, litigation would be pending now with the Government suing General Dynamics for breach of contract instead of giving them so much money and then being put in a position of having General Dynamics—who should have been down on their knees thanking God for the gift—suing to try to pick up some more. The people that day were very clear about that and none of the people that were at the hearing, to the best of my knowledge, even recommended the course of action that Mr. Dow and Mr. Butterfield took. So that is not a relevant point as it deals with ASR–8 or with the ARSA–III or the academy simulator procurement. We were concerned somewhat that within 2 recent fiscal years they lost $25 million of the taxpayers' money by washing people out of the academy or having dropouts because until they got into OJT, nobody ever really knew if they could read a radar. It didn't seem to make any sense, not to me anyway.

I don't think you could find it anywhere in the record of these hearings that there were any witnesses who testified to anything adverse to FAA except where they dealt with their procurement management and there is no one in the world that could dispute the testimony of the actual facts. We specifically did not have some of the professional FAA critics who wanted to come to the hearings. We weren't interested in having someone stand up and say that they were great, or they were terrible, or this or that.

There were questions raised and we wanted to get some answers and we got answers. Unfortunately, on the General Dynamics bailout, they couldn't come up with a satisfactory answer, but at least they let us know what the decisionmaking process was like. That was the purpose of the hearings.

You mentioned the BCAS. We got into that earlier and I can't recall how far along that was. As I recall, that one has a way to go.

Mr. MILFORD. They are all under study, Mr. Chairman. None of them are fully developed. They are on schedule.

Mr. BURTON. You thought that there were statements made that reflected on the various other subcommittees of the House and, I guess, the Senate, and I guess the appropriations subcommittees. Were you referring to statements within this committee's hearings

or statements from outside groups or what? You mentioned that there were statements made——

Mr. MILFORD. Statements made during the process of your hearings, Mr. Chairman. If you like, I would be glad to compile specifics to you and submit them to you in supplement.

Mr. BURTON. Surely some of them must come to mind.

Mr. MILFORD. Primarily, they are the ones involving air safety. Any time we have charges or even implied charges of the lack of safety they just literally scare the heck out of people that ride on commercial air carriers. What comes out on the evening TV newscasts is usually misleading. These people over here with their cameras are going to grab about 40 seconds out of what has been going on all day in these complex hearings. That 40 seconds will be the most dramatic or sexiest or wildest statement that somebody made during these hearings. Everybody listening to that television newscast is going to gain the impression that flying is dangerous and the broadcast will scare the devil out of them the next time they ride the airlines.

Mr. BURTON. They could only get that impression if the FAA didn't have answers to the questions.

Mr. MILFORD. That is the purpose of submitting the statement that I have just put into your record. It tells the complex truth.

Mr. BURTON. Right. That is a statement they made in response to some third party's claims against them. No one watching a video tape of any or all of this hearing could have heard a claim from us that it is unsafe to fly. Questions were asked of the FAA and the only way anyone could have doubted the safety of flight would be if the FAA gave unsatisfactory answers.

Mr. MILFORD. There again, I haven't been able to be present every minute of your hearings. After reviewing the record, I would be glad to submit to you, in a complete form, a critique rather than trying to provide only a partial answer to something wherein I do not know the complete details.

Mr. BURTON. Because you made the statement, I answered the question. That was all.

Mr. MILFORD. My statement is exactly as I made it.

Mr. BURTON. Right. I know that. I assume that you must know what some of those things are or you wouldn't have made the statement.

Mr. MILFORD. Yes. I was reacting to the tenor of a hearing and the way it was going and the fact that it was covering apparently only one side of the issue. As stated to you, if you are going to criticize FAA or call them on the carpet for something, at least have all parties in, that had direct bearing on the subject.

Mr. BURTON. We did. We had the FAA. On the questions that dealt with FAA, we called them in and asked them how they blew all this money. They attempted to tell us. We asked them what the problems were, what improvements could be made in "see and avoid," and some other safety-related matters. They explained that. I wouldn't know any better source to ask than the FAA. I didn't ask ALPA. I didn't ask Ralph Nader. I asked the agency and the committee asked the agency. I wouldn't know any better way——

Mr. MILFORD. When you are talking about charges with aviation safety, who would be better qualified to tell you whether the

charges are true or not than those directly involved in the piloting of airplanes, for example.

Mr. BURTON. If you want to hear somebody do a number on FAA, we could have 3 days' testimony from those people. Also, the FAA through their new interagency agreement with NASA has all near misses reported with immunity so that no one ends up getting in trouble by reporting an incident. This works out a lot better than it did when they were having the near misses reported without immunity.

Mr. MILFORD. When you say anonymity and then call the researcher that is responsible for that research, you are no longer remaining anonymous, are you?

Mr. BURTON. Yes; we are. Dr. Billings of NASA explained how their program works. He's happy with it. The FAA people seem to feel that it has helped them. When they used to give immunity to people on reporting near misses they had 276 reports. When they cut the immunity off, they were down to 12.

Mr. MILFORD. I am very familiar with the program.

Mr. BURTON. I am sure you are, sir. The only person whose name was mentioned in connection with that report was Dr. Billings who was almost overly circumspect in his testimony to lay this out. He was talking about a procedure. Nobody's cover was blown.

Mr. MILFORD. Mr. Chairman, I don't want to debate with you. I didn't come here——

Mr. BURTON. It seems like you did.

Mr. MILFORD. I came here with an opinion and I have expressed an opinion. I will stand with it when weighed against the record as a whole. One has to look at the record as a whole before making a judgment. I stated my opinion and the reasons for it and the justifications for it. Either it stands or falls.

Mr. BURTON. I think you misunderstood the purpose of the hearings. You got the hearings tied up with a television series.

Mr. MILFORD. Maybe I did.

Mr. BURTON. I really do think you did.

Mr. MILFORD. I had received information that the television story itself was used as the reason for the hearings—one of the reasons for the hearings.

Mr. BURTON. Well, I'll just give you this one under oath. The hearings were planned before the television station even interviewed anybody.

Mr. MILFORD. Here again, Mr. Chairman, I have given you my thoughts.

Mr. BURTON. I will give you three facts as to what aroused my interest and you, I think, as a legislator will understand this.

One, I told you the story of the deregulation memos.

Second, I read a court decision. This is not relevant to anybody but me. An airline pilot refused to take up a plane because he thought it was unsafe. He was disciplined. He sued the FAA on the basis of their regulation that the pilot is responsible for the safety of the plane, et cetera. In court the FAA raised the issue that he was being ordered to take the plane up and that while the plane was on the ground it wasn't in operation, therefore that regulation didn't apply. That did not inspire much confidence. It is a very minor thing, but it was convoluted thinking.

But I believe the testimony we got today was very good. I think that it answered a lot of questions that this committee has. I think it will raise more questions. We specifically avoided getting into areas that didn't tie into the area of procurement management.

This subcommittee under Mr. Brooks, going back years, has had a great interest in FAA and Mr. English——

Mr. MILFORD. I don't question that.

Mr. BURTON. That was it. There were no unfriendly witnesses. There may have been some questions that maybe someone as knowledgeable as you would not have had to ask.

Mr. MILFORD. Again, Mr. Chairman, I make an offering and if it is out of place, then it will be reflected as such within your record and people will disregard it. If it is appropriate then it stands as it is submitted. I do so without animosity to you or the committee. You have every right to make inquiries of this nature. It is your jurisdiction just as it is ours also. The information I had received about your hearings was that you were going into some areas, as I said in my statement, that reflected on us. We are involved with this matter too, as well as the other committees.

Mr. BURTON. Right. I guess that any committee of the House that finds any mistake anywhere in Government might find that it might be in some other committee's jurisdiction and could be accused of that, but it is not meant to reflect on you.

Mr. MILFORD. I say let's take the issues themselves and address the issues. I am not here to debate jurisdictions with you.

Mr. BURTON. What we did was address the issues and the FAA was the only one called upon to answer the questions and make statements, except GAO and the GAO person who was assigned to us on the ASR–8 investigation. Dr. Billings explained the ASRS program. It showed that they were doing some very positive things.

The FAA was asked questions and answered questions. I still have some questions as to how they can ignore their own internal memos.

Especially in procurement and other things, I do believe they can improve greatly. That was just it.

Could I see a copy of the FAA's reply they wanted in this record? When we talked to them, we made it clear to them that if they wanted to get on a face-to-face debate with one of the networks, they could do that too—somewhere else.

Am I put in a position now, in the name of fairness to the other people, to allow for a rebuttal?

Mr. MILFORD. It is your subcommittee. I simply asked you to see it. What you have in hand there is a reply back to me after I had requested FAA to take an NBC so-called documentary that was aired on November 2 and November 4, and make a detailed critique statement by statement and list references. That is the result that you have in front of you.

If I could, Mr. Chairman, you asked me for a specific a while ago and I didn't have it in front of me. I do now. In your press release that you issued Monday morning, in the next to the last paragraph it states: "Burton also noted his subcommittee's series of hearings may also look into recent TV network news reports focusing on other problems confronting the aviation agency." This was one of the things that prompted me to ask to testify.

Mr. BURTON. Right. As it turned out in our letters to FAA, we specifically limited it to what we were saying. If you feel that——

Mr. MILFORD. I was just quoting from your news release.

Mr. BURTON. I am saying that your original statement was—things made in the hearings. Things made in the press release—I'll stand by that one too.

I have no further questions.

The point was raised that when we have our subcommittee and our quorum, there are other items that have to be included other than testimony. We will deal with putting this into the record. You are not going to get shut out of it.

Mr. MILFORD. Whatever, sir. I inserted it in the Congressional Record today.

Mr. BURTON. You did? Well, that's pretty good, I guess. I don't know if we need to do it then. Nevertheless, I have no objection to it. If it is in the Congressional Record today maybe they will be sending us some letters answering the answers because the record will remain open.

Thank you very much.

Mr. MILFORD. Thank you, Mr. Chairman. I appreciate it.

Mr. BURTON. The subcommittee is adjourned.

[Whereupon, at 1:55 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

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